Manufacturers Record

THE SOUTH MOVES ON

The striking photograph of Dallas' skyline is typical of modern Southern centers of industry that are a tribute to the energy of private initiative.

The South bids fair to make another record of progress in the coming year.

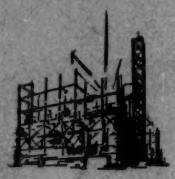
JANUARY 1940

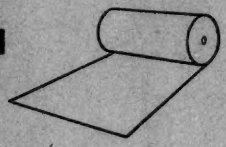
The resources of forest and mine and field are attracting the chemist, manufacturer and investor as never before. In this section are industrial and wealth creating possibilities unequalled elsewhere.

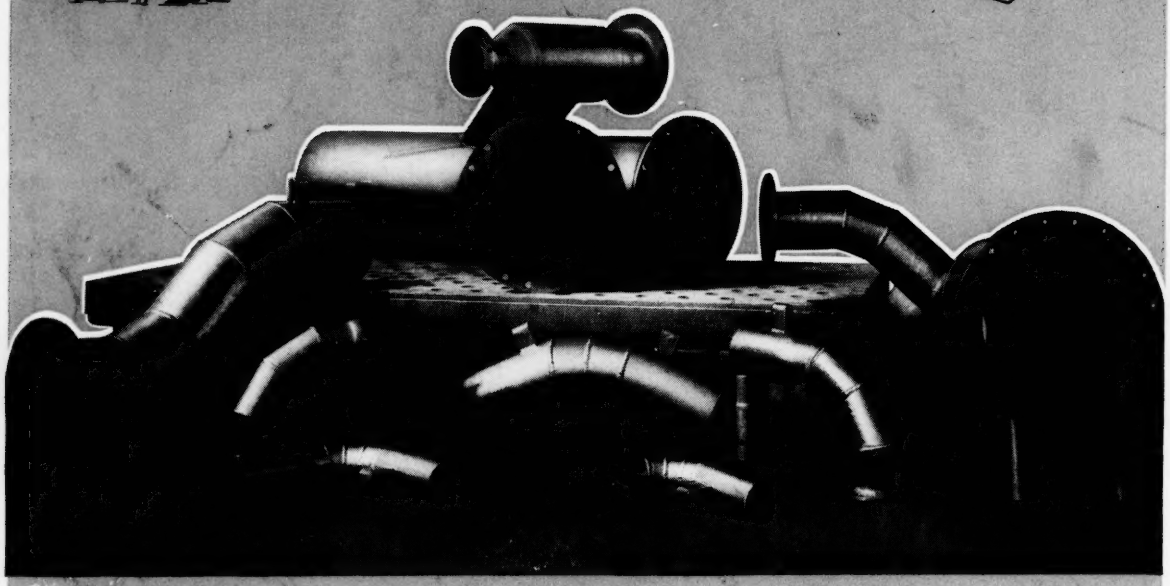
Dr. Herty's dream comes true in the manufacture of newsprint reported to start this month at Lufkin, Texas, the beginning of an industry to supply from Southern pine the needs of American newspapers.

Paper Manufacturer Cuts Time

BETWEEN INVESTMENT AND RETURN







To construct and weld these complicated parts of power and process lines *in the field* would have been a long, arduous job.

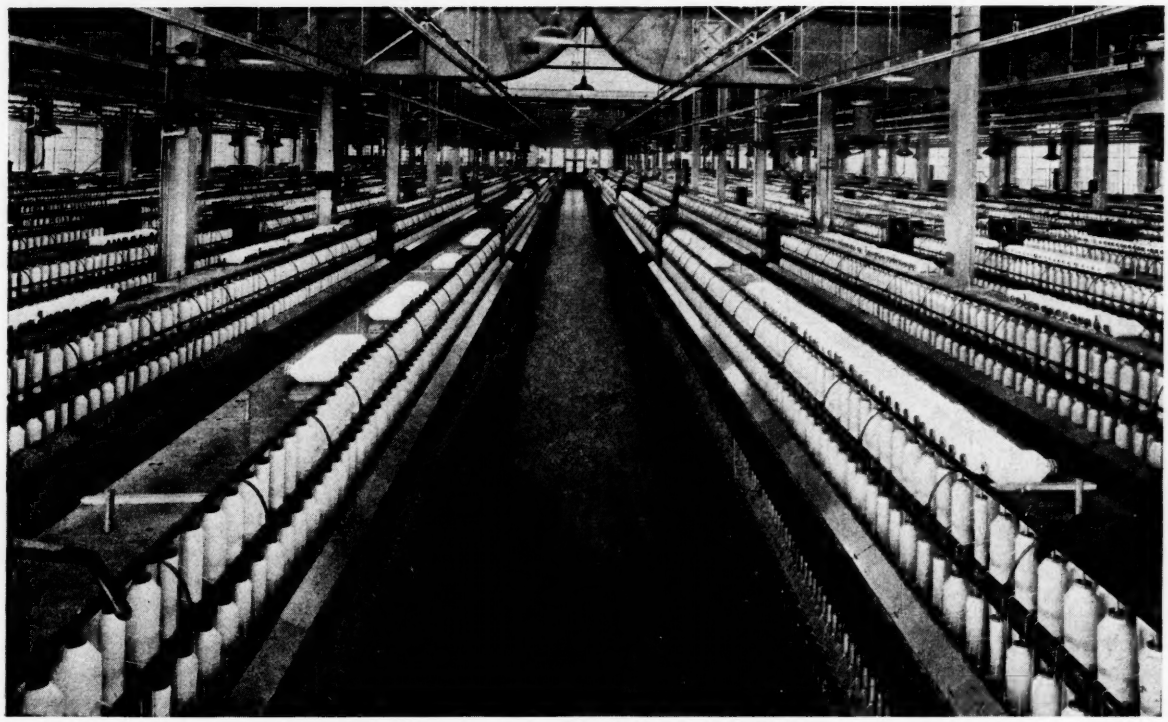
This paper manufacturer wanted *results*, so his engineers turned to Grinnell for accurate sub-assemblies, prefabricated to their specifications, as soon as the job was started. When the time came for their use, these units were ready to slip into place and weld.

Advanced plant facilities, strategically located for service to the nation . . . piping experts who can interpret your plans in terms of latest developments . . . qualified welders, whose work passes insurance tests before it leaves the plant . . . these are some of the benefits you gain when you say, "Give the plans to Grinnell." Grinnell Co., Inc., Executive Offices, Providence, R. I. Branch offices in principal cities of the United States and Canada.

PREFABRICATION BY **GRINNELL**

WHENEVER **PIPING** IS INVOLVED

Here *Comfort* and *Economy* Walk Hand-in-Hand ON FLOORS OF NORTHERN HARD MAPLE



The Mathews Cotton Mill, Greensboro, S. C., floored with Northern Hard Maple

You cut costs "from the ground up" with Hard Maple —and it's easy to see why.

Watch workers—they show fatigue less quickly on resilient Maple, while its warm dry comfort and sanitation guards their health.

Watch machinery—Hard Maple creates no dust injurious to bearing surfaces.

Watch traffic—Both trucks and men move faster with less effort on this smooth-surfaced floor.

Watch monthly costs—for cleaning and for maintenance. Brushing alone keeps Maple clean. And Hard Maple wears smooth, does not sliver or splinter even under the wear of heavy, steel-castered trucks. Too, Hard Maple simplifies alterations, machinery shifting and renewal.

Watch wear—This flooring's famous for its long wear—its low cost per year of service.

Add these reasons and it's easy to see why scores of factories and mills use nothing but Northern Hard Maple—and, like the Mathews Cotton Mill above, find it *most satisfactory in every way.*

For Hard Maple at its finest, they make sure of *Northern* Hard Maple, by specifying trademarked **MFMA*** Flooring, in strips or blocks. *Ask your architect.*

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1797 McCormick Building, Chicago, Illinois

• • •

See our catalog data in Sweet's, Sec. 11/78.
Write for leaflet on heavy-duty finishes for old or new floors.

* *The* **MFMA** *trademark, indented and stamped on Maple flooring, guarantees it to be* GENUINE *Northern Hard Maple, graded and* **MFMA** *supervised in accordance with the Association's exacting standards.*

Floor *with* MFMA Maple

REG. U. S. PAT. OFF

(NORTHERN HARD)

TABLE OF CONTENTS

JANUARY, 1940

Volume 109, Number 1

EDITORIALS

The South Moves On ..... Cover
As Congress Meets 23
A Threat to Widows and Orphans 24
"The South's Resources" 24
Newsprint Now Being Made in the South 25
The Juggernaut Proceeds 25
A Ten Year Program 25

FEATURE ARTICLES

A Square Deal in Place of the New Deal by Dr. John J. Wicker 26
The South and Its Opportunities for Industry 27
Steel in 1940 by Walter S. Tower 32
Shipbuilding at Highest Point Since World War by H. Gerrish Smith 33
Railroad Reserve Capacity by J. H. Parmelee 34
Coal Situation and Outlook by Jesse V. Sullivan 36
South's Oil in 1939 Worth $800,000,000 at the Well by Victor H. Scales 37
Pulp Man's Paradise by Donald D. Bode' 38
South's Lumber Industry Prepared for War Developments by H. C. Berckes 39
Cotton Textile Outlook by Paul B. Halstead 40
Fertilizers 1940 by Charles J. Brand 41
South's Construction Nears Record High by S. A. Lauver 42
New Industrial Plants and Expansions in the South During December, 1939 45
Cottonseed Industry 1939 by S. M. Harmon 46

DEPARTMENTS

Letters and Comments 7
New Ways of Doing Things 48
Finance and Industry 52
Industrial News 56
Trade Literature 58
Index for Buyers 76
Index of Advertisers 78

Cover illustration of Dallas, Texas skyline by courtesy of Lloyd M. Long and Dallas Chamber of Commerce

MANUFACTURERS RECORD

Devoted to the Upbuilding of the Nation Through the Development of the South and Southwest as the Nation's Greatest Material Asset

Published Monthly by the
MANUFACTURERS RECORD PUBLISHING CO.
FRANK GOULD, President

Main Office: Manufacturers Record Building, Commerce and Water Streets, Baltimore, Md. Phone: Plaza 7080-1.
Branch Offices: New York—11 W. 42nd St. Phone: Longacre 5-7180.
Chicago—28 East Jackson Blvd., Room 1510. Phone: Harrison 5867.
Cleveland, O.—850 Euclid Ave., Room 310. Phone: Cherry 4050.

Subscription Rates: One Year $2.00, Two Years $3.00. Single Copies 25c, back numbers over 3 months old 50c. Other Publications of the Manufacturers Record Publishing Co. Construction (daily and monthly issues) $10.00 a year. Construction (monthly issues only) $2.00 a year. Blue Book of Southern Progress (annual) $1.00 per copy.

Member A.B.C.

Entered as second class matter at the postoffice, Baltimore, Md., U.S.A., under act of March 3, 1879. Volume 109, Number 1 Monthly

Announcing

"The SOUTH'S RESOURCES"

To be published this spring

SEVENTEEN DIVISIONS

•

ALABAMA

ARKANSAS

FLORIDA

GEORGIA

KENTUCKY

LOUISIANA

MARYLAND

MISSISSIPPI

MISSOURI

NORTH CAROLINA

OKLAHOMA

SOUTH CAROLINA

TENNESSEE

TEXAS

VIRGINIA

WEST VIRGINIA

THE SOUTH

•

IT IS NOT often that the MANUFACTURERS RECORD publishes a special issue. The last one was in 1924, THE SOUTH'S DEVELOPMENT, a publication of 668 pages which ever since has served as an encyclopaedia of facts, figures, tabulations of comparative progress and general information on the industrial development of the South.

But, in these days, great things are happening in the South, and we feel impelled to meet the demand for facts of the Southern States, their matchless natural wealth and industrial opportunities, in one volume for immediate use and reference.

It is not possible for everyone to fly over the South to get a first-hand bird's-eye-view of this marvelous country; to see and learn of its physical resources, equable climate, transportation facilities, timber, minerals, public and private power facilities, the available labor that is plentiful, loyal and willing. Add to all this,—the South has glamour, romance, history, patriotism, wealth, destiny, American traditions and the American way of doing things.

The next best thing, and indeed more quickly grasped, is to spread before executives of American industry, men in public life, economists, industrial engineers, investors and bankers and all students of industry, graphic outlines in the form of three color, two page maps of each Southern State clearly showing the physical resources by counties, supplemented by additional material and an authoritative statement of factual information prepared with the cooperation of State and Federal authorities.

This publication will have seventeen principal divisions—one for each of the Southern States and a final composite map of the whole South—the initial publication of which is elsewhere in this issue.

Please write for our 16-page booklet describing more fully this important work. It will be promptly sent with our compliments.

MANUFACTURERS RECORD

BALTIMORE, MARYLAND

WATCH FOR FURTHER ANNOUNCEMENTS

» » » LETTERS « « « AND COMMENTS

Coal Export Tonnage

Editor,

MANUFACTURERS RECORD:

In your December 1939 issue, Page 24 and following, you show a tabulation of "The South's Foreign Trade With South America."

I am particularly interested in the coal exports, as shown from the ports of Norfolk, Virginia; Baltimore, Maryland, and Charleston, South Carolina, and would appreciate it very much if you would let me know from which states these tonnages were exported.

I would likewise also appreciate it if you could separate the coal tonnage from the coke tonnage in the tabulation of exports from Baltimore.

BORGE ROSING, General Sales Manager
West Virginia Rail Company, W. Va.

The information sought is not available, the reason being that such data is not required by law in the case of exports on these commodities. Coal leaving Baltimore originates principally from Pennsylvania and Maryland, though some originates in Virginia and West Virginia. In the case of Norfolk, nearly all the coal comes from Virginia and West Virginia. Coal leaving Charleston comes principally from Virginia.—ED.

Foreign Trade

Editor,

MANUFACTURERS RECORD:

I wish to thank you for copies of MANUFACTURERS RECORD and to congratulate you on the high quality of the articles devoted to foreign trade. At the present time these are of exceptional importance to your readers, in keeping them fully informed of the opportunities still presented of carrying on our normal trade with neutral countries, especially in South American markets.

JAMES A. FARRELL, Chairman National
Foreign Trade Council, Inc., N.Y.C.

An article by Mr. Farrell, who is Chairman of the National Foreign Trade Council, Inc., will appear in an early issue.—ED.

Cotton and Housing

Editor,

MANUFACTURERS RECORD:

In this morning's mail we received your December copy of MANUFACTURERS RECORD and we are very much interested in the article on Page 19, by Charles K. Everett, regarding the use of cotton in housing and construction work.

We are interested in prefabricated homes and expect to build quite a number of them, and we kindly ask you to give us some information as to where we might obtain samples and prices of this material with a view to utilizing it in our project.

CHARLES F. SCHUETZE, President, Manitowoc
Church Furniture Co., Waukesha, Wis.

The information given Mr. Schuetze will be forwarded gladly to any reader requesting it.—ED.

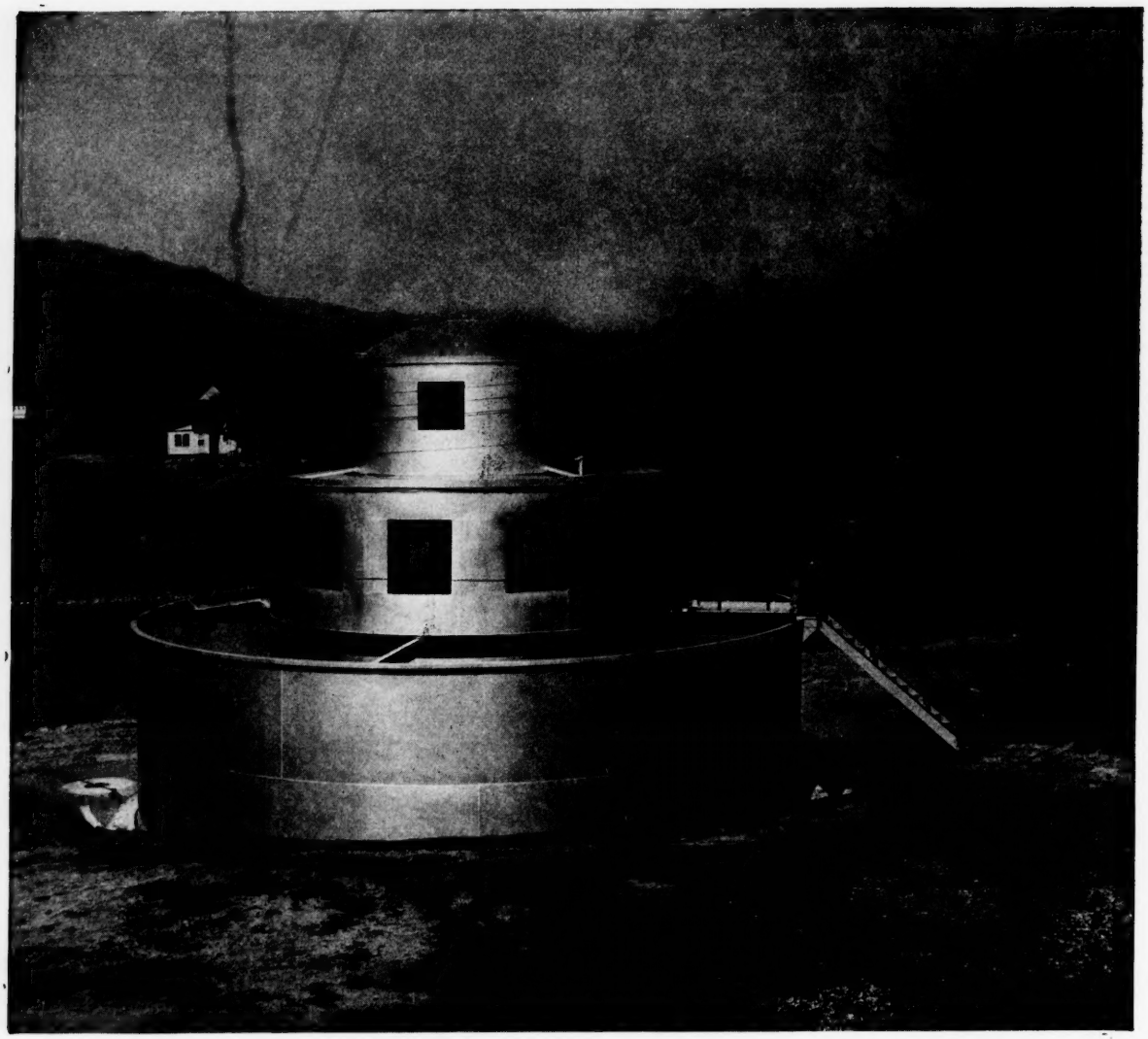
Pulpwood Industry

Editor,

MANUFACTURERS RECORD:

While I expected and hoped for some slight data from you to supplement what I had on the pulpwood industry, the articles you sent me from the MANUFACTURERS RECORD gave me more light on the subject than I knew existed. After reading the articles, I feel like the Scotchman who said, on putting a

(*Continued on page 9*)



A Modern FILTER PLANT for purifying municipal and industrial water supplies

The first plant for filtering a municipal water supply—installed in Scotland in 1804—was circular in form. It is interesting to note that after 135 years we have returned—in the Morse plant—to the same fundamental shape, and now, with welded steel construction, there are many more advantages to be gained by using a circular shape.

The illustration above shows a typical 720,000 g.p.d. Morse plant recently completed for the Citizens Water Co. at New Bethlehem, Pa.

The piping connections, valves, sight well, etc., are located in a circular pipe vault at the center. The operating floor, directly above the pipe vault, and the filters, in a concentric ring around the vault, are enclosed. The mixing units and coagulating basins are located in the outside ring and not covered. Enclosed chemical storage is provided on the third level.

Morse filter plants are compact, requiring minimum ground area. All parts are readily accessible for inspection and painting. The loss in head through the plant is considerably less than in rectangular plants. The welded steel walls are impervious, preventing contamination due to seepage. The steel will not spall off. There is no cracking or leakage from uneven settlement.

Plans and specifications for Morse plants are made just the same as for any rapid sand plant. The only difference is the use of the economic concentric shape and welded steel construction.

CHICAGO BRIDGE & IRON COMPANY

Birmingham .....1530 North Fiftieth Street
Dallas .....1408 Liberty Bank Bldg.
Houston .....2919 Main Street
Tulsa .....1611 Hunt Bldg.
New York .....3313-165 Broadway Bldg.
Cleveland .....2216 Rockefeller Bldg.
Chicago .....2106 Old Colony Bldg.
San Francisco .....1040 Rialto Bldg.
Philadelphia .....1619-1700 Walnut Street Bldg.
Detroit .....1510 Lafayette Bldg.
Boston .....1510 Consolidated Gas Bldg.
Havana .....Edificio Abreu 402

B-698

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.

"Letters and Comments"

(*Continued from page 7*)

nickle in a slot-machine for the first time and hitting the jackpot, "God Lord, how long has this been going on?"

IRVINE RUTLEGE, Attorney at Law,
Hagerstown, Maryland.

The articles referred to all appeared in the MANUFACTURERS RECORD *during the past several years. Another significant event in the development of this industry is the opening this month of the Southland Mills at Lufkin, Texas, the first mill in this country to produce newsprint from Southern pine. See editorial in this issue.*—ED.

Southern Minerals

Editor,

MANUFACTURERS RECORD:

Unfortunately, Dr. Branner either did not know about, or ignored the barite mining industry, of very noticeable importance in Missouri and Georgia. Naturally, one cannot enthuse over an article that omits specifying and listing with others, singled out—some of which are little, if any, more important than the great paint industry.

Especially if one is, himself, engaged in the business. In other words, we feel as "big" as some of the others invited.

ROCHESTER IRWIN, Secretary-Treasurer
Osage-Ozark Mining Company, Versailles, Mo.

Mr. Irwin's letter published above was referred to Dr. George C. Branner, author of the article, "Mineral Production in the South," which appeared in the November MANUFACTURERS RECORD. *His answer follows, not only because of the interesting point raised, but for the additional important information it brings.*—ED.

Editor,

MANUFACTURERS RECORD:

I was interested to receive a copy of Mr. Rochester Irwin's comment with reference to my article in the November issue of the MANUFACTURERS RECORD on "Mineral Production in the South" in connection with my failure to refer to the barite mining industry.

I quite agree with Mr. Irwin that the barite mining industry is a not unimportant one in the South since, during the ten-year period 1927-1936, the value of barite produced in the 16 Southern states was $11,162,657 which was 83% of the value of all barite produced in the United States during that period.

In accordance with the scope and perspective of the article, however, there was only one place in which this item could have appeared individually. This was in Figure 5, "Value of Minerals Produced in 16 Southern States, 1927-1936 Inc. (By Items.)" Barite, however, was included in this figure under "All Others" which includes 46 different items. The 18 individual items shown accounted for 97% of the total value for all of the 64 different mineral items considered. The first seven mineral items following the 18 items, together with their value for the period indicated are as follows:

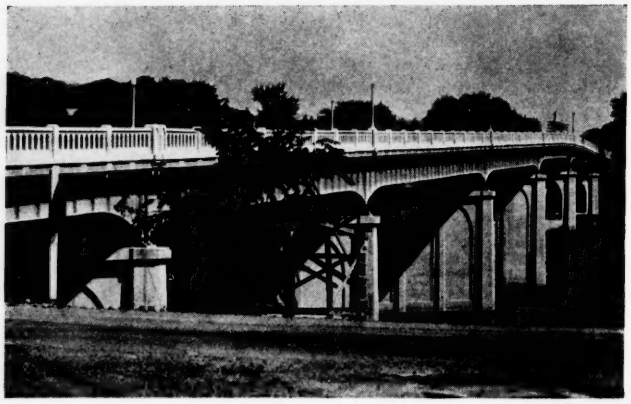
Barite	$11,162,657
Fluorspar	8,171,096
Fuller's earth	6,618,403
Copper	6,505,360
Ferro-alloys	6,234,441
Feldspar	5,760,727
Silver	5,409,253
	$49,861,937

The aggregate value of these seven items, however, was only 3/10 of one per cent of the value of all items. Drawing the line under the 18th item, bauxite, was purely arbitrary and many other items could just as well have been included had there been space to do so.

The item did not appear in Table 2, "Total Value of Mineral Production for 10-year Period 1927-1936 in 16 Southern States and Value of Five Most Valuable Products," under Missouri as only the five most valuable minerals were shown for each state, whereas, in the case of Missouri, barite was the ninth in value of $8,154,000, which was 1.5 per cent of the value of all Missouri mineral products for that period.

An article discussing the mineral products of minor economic importance to the South would give a prominent place to barite.

GEORGE C. BRANNER, State Geologist
Arkansas Geological Survey, Little Rock, Ark.



Down to the Sea

All our rivers run to the sea, but our highways travel in all directions over Bridges of Steel—safe, sightly and lasting.

We have been building them over 40 years.

VIRGINIA BRIDGE COMPANY

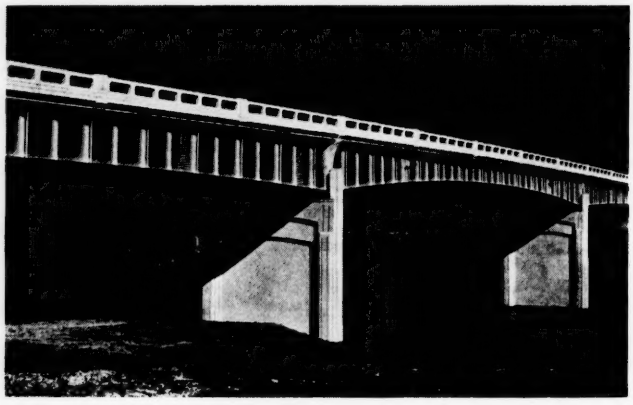
Roanoke Birmingham Memphis
Atlanta New York Dallas

Upper Left: Bridge over Little Tennessee River, near Bryson, N. C.

Lower Left: Continuous Girder Bridge over James River, Buchanan, Va.

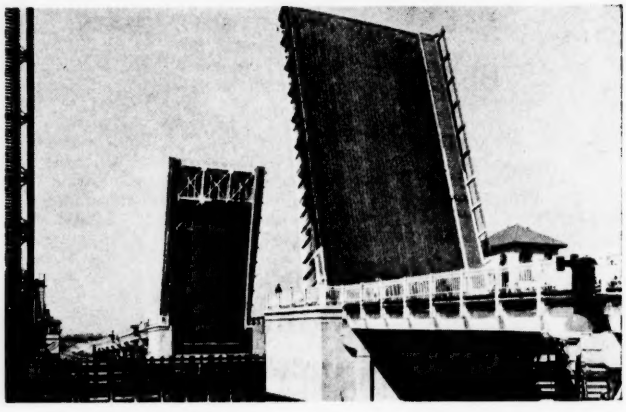
Upper Right: Cantilever Girder Span over Pearl River near Monticello, Miss.

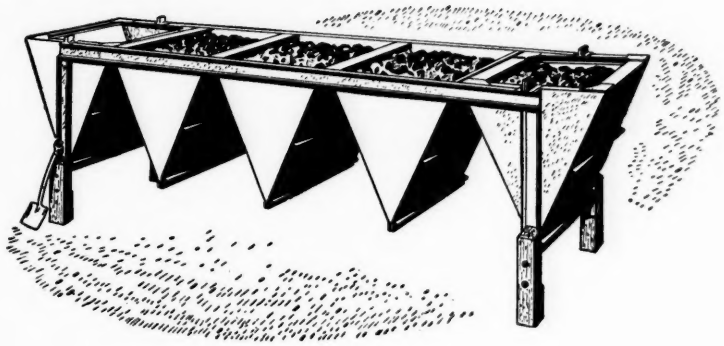
Lower Right: 170′ Double Leaf Bascule Bridge over South Branch Elizabeth River, Norfolk, Va.



Virginia Bridge

STEEL STRUCTURES





NEWS ITEM: NOTHING HAS HAPPENED FOR SEVEN YEARS

Know what makes the coal cars on our railroads moth-eaten before their time?

Sulphur.

It's in most coal. It gets wet, out in the open. And then it does its dirty work.

Now for a contrast: Pictured are five hoppers. The four on the left are Alcoa Aluminum. All five have stood in one exposed location for over seven years. Each year we refill the four right-hand hoppers with nice fresh sulphur-laden coal just to see what happens.

And *nothing happens* to the Alcoa Aluminum hoppers, year after year. Railroad executives please note.

Nature made Aluminum resistant to many common sources of industrial corrosion and to the attack of many chemicals commonly used in the process industries. Research has made Aluminum alloys strong. Nature made Aluminum friendly to food.

Thing that bothers us is why more executives don't put this combination of strength and resistance to corrosion to work. It's a money-saving combination. Aluminum Company of America, 2109 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA · ALUMINUM

Nicholas Trott, Arthur Middleton, William Rhett, John Rutledge and Francis Marion—the names of South Carolina tell its story of fortitude, brains and enterprise.

We salute the roll-call of the state: the Porchers and Hugers, the Burnets and Maybanks, the Mazcyks and the Jerveys. We salute Geers, Marshalls, Mannings, Peaces, the Sirrines and the Wannemachers. Scores of families should be mentioned, if space permitted, for the Palmetto State owes its progress to the character of its manpower.

With the alertness of "The Swamp Fox", South Carolina wins over all vicissitudes. Once a world leader in indigo, long staple cotton and rice, its people have turned to lumber, Kraft paper, tourists and agriculture, fertilizer and textiles as new paths of commerce. The state marches on.

A flourish of trumpets, then, to Spartanburg and Greenville, to the friendly sleepy courthouse at Pickens, to Laurens and its Margaret McCrea, to Anderson and Bamberg, to the lush gardens of Aiken, to Orange, to historic Charleston, and to Columbia, the capital.

We of Bethlehem appreciate the progress which is built on knowledge and long tradition. We are prepared to make the steel to serve your many industries, from King Street to Textile Hall.

Did you know?

That some of the finest cotton textiles produced anywhere in the world are made in South Carolina.

That tidewater power was first utilized in South Carolina for milling and cleaning rice.

That in 1833 South Carolina had the world's longest railroad. This railroad ran 133 miles from Charleston to Hamburg.

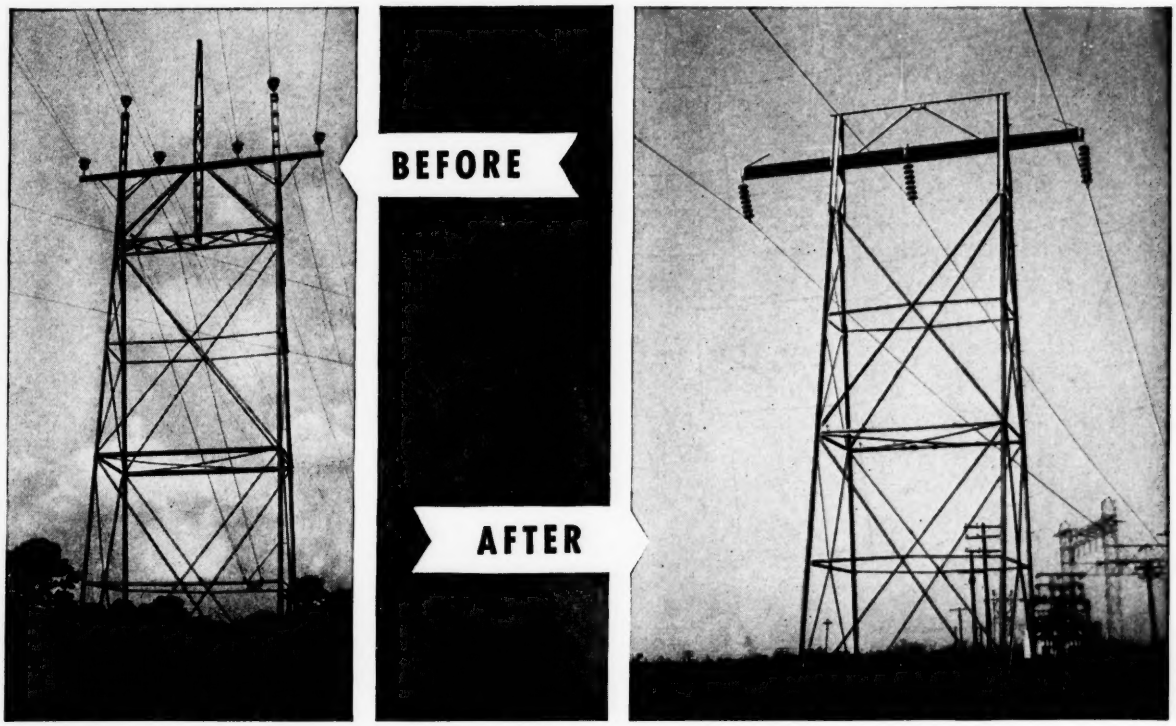
That The Dock Street Theatre still standing in Charleston is the earliest playhouse in America.

That Columbia and Greenville, South Carolina are style leaders for cotton print fabrics sold throughout the world.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY

WE "*Modernize*" TRANSMISSION LINES, TOO



UNDER favorable conditions, the life of galvanized steel is practically indefinite, but electrical requirements often change. A good line may be headed for obsolescence simply because continued, economical operation may dictate stepped-up electrical capacity and voltage. The problem is not infrequent in our experience.

A typical example was an 85-mile transmission line in the south. This old pin type two-circuit 66 KV line could no longer meet requirements. The change required was to a single-circuit 110 KV line.

A rigid field inspection disclosed the 30 year old steel in good condition. Obviously, the thing to do was to save as much of it as possible. Using the old construction as a base, there was developed, in collaboration with the customer's engineers, a modernization plan which was not only effective and economical as to material and fabrication but held erection costs to a minimum. The new material was designed to use existing holes throughout, obviating field drilling.

This typifies the advantage in employing specialists in the design, fabrication and erection of transmission line structures. American Bridge Company devotes an entire plant to the fabrication and galvanizing of tower steel alone. Whether your problem is one of modernization of an existing line or building a new one you may freely call upon the specialized experience of our engineers.

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

Baltimore · Boston · Chicago · Cincinnati · Cleveland · Denver · Detroit
Duluth · Minneapolis · New York · Philadelphia · St. Louis

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* • United States Steel Export Company, New York

UNITED STATES STEEL

THE COMPLETE LUNKENHEIMER LINE

Immediately Available

From Distributors Conveniently Located to Serve You

VALVES

Bronze, Iron, Steel and Corrosion-Resistant Alloy; Globe, Angle, Cross, Check, Gate, Throttle, Non-return, Blow-off, Pop Safety, Relief, Whistle, etc.

BOILER MOUNTINGS

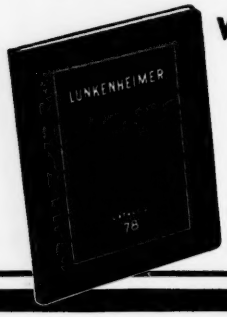
Non - return, Pop Safety and Blow - off Valves; Water Columns, Water Gauges and Gauge Cocks; Fusible Plugs.

OIL AND GREASE CUPS

Glass, Bronze or Aluminum Body Oil Cups; Bottle Oilers; Constant Level Oil Controls; "Glaswick" Oil Cups; Automatic or Screw Feed Bronze Grease Cups.

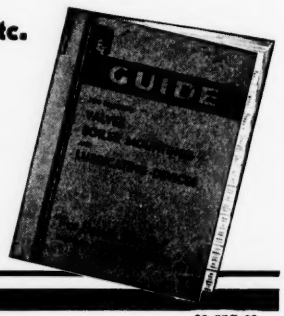
LUBRICATORS

For Steam, Gas, Gasoline, Oil Compressor and Pump Cylinders; Gravity Feed or Hydrostatic.



Whistles, Cocks, Fittings, Unions, Air Nozzles, Etc.

Lunkenheimer Catalog 78 describes and lists the complete Lunkenheimer line. The Guide is a ready reference for selecting Valves, Boiler Mountings and Lubricating Devices in which products are grouped by pressure, type and use. Ask your local Lunkenheimer distributor for copies or write us direct.



THE LUNKENHEIMER CO.

"QUALITY"

CINCINNATI, OHIO, U. S. A.

NEW YORK CHICAGO
BOSTON PHILADELPHIA

EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

28-55C-62

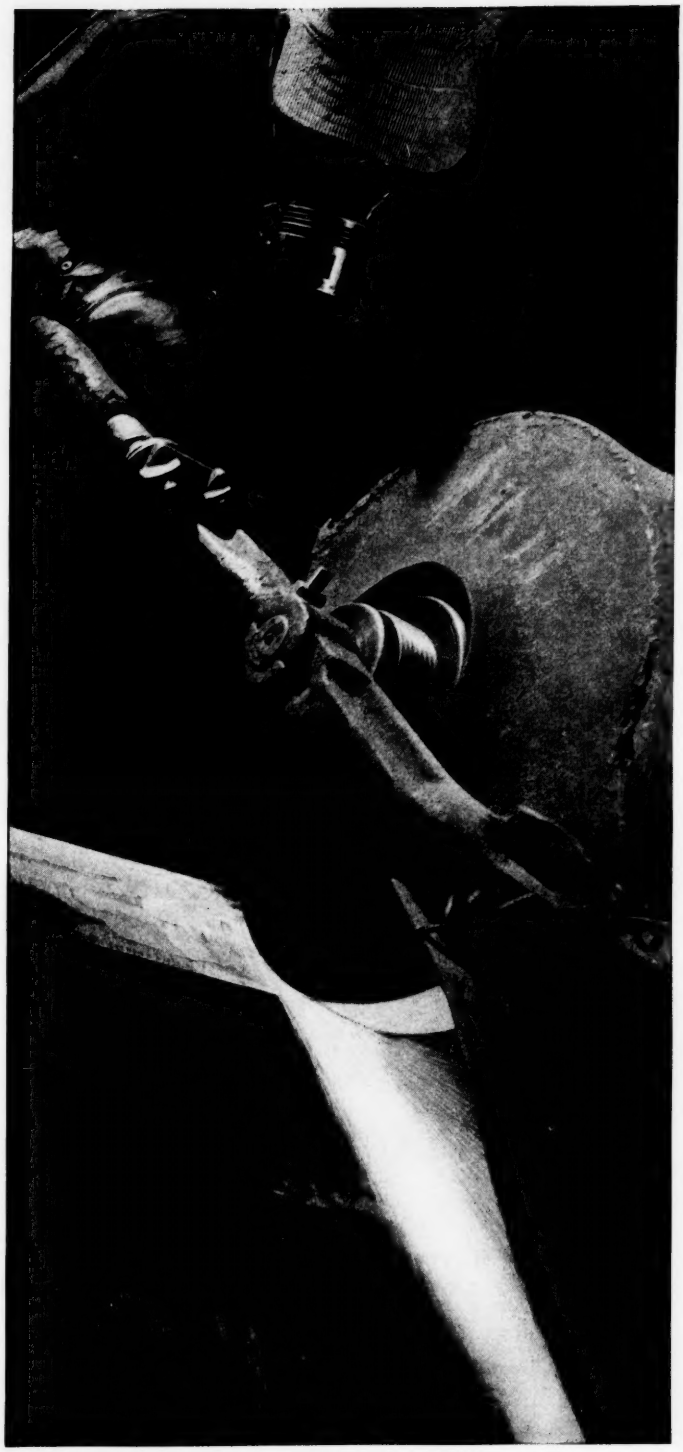


Photo courtesy Braeburn Alloy Steel Corporation, Braeburn, Pa.

PUT NORTON RESEARCH TO WORK

Cutting Your Grinding Costs

A product of modern research — that's a true description of Norton Resinoid Wheels for billet and foundry grinding. In the Norton laboratories there's a group of scientists that specializes in resinoid bond development. Not only have they made many important improvements in the bond formulae but have also developed an elaborate control system that improves production quality and uniformity.

These laboratory developments coupled with an entirely new production department with the very latest available equipment have resulted in new standards of quality for resinoid wheels — wheels that are cutting billet grinding costs for many plants. Let Norton engineers study your jobs and give you the benefit of these improved wheels.

NORTON COMPANY
WORCESTER, MASS.

New York Chicago Detroit
Philadelphia Pittsburgh Hartford
Cleveland Hamilton, Ont.

W-711

NORTON ABRASIVES

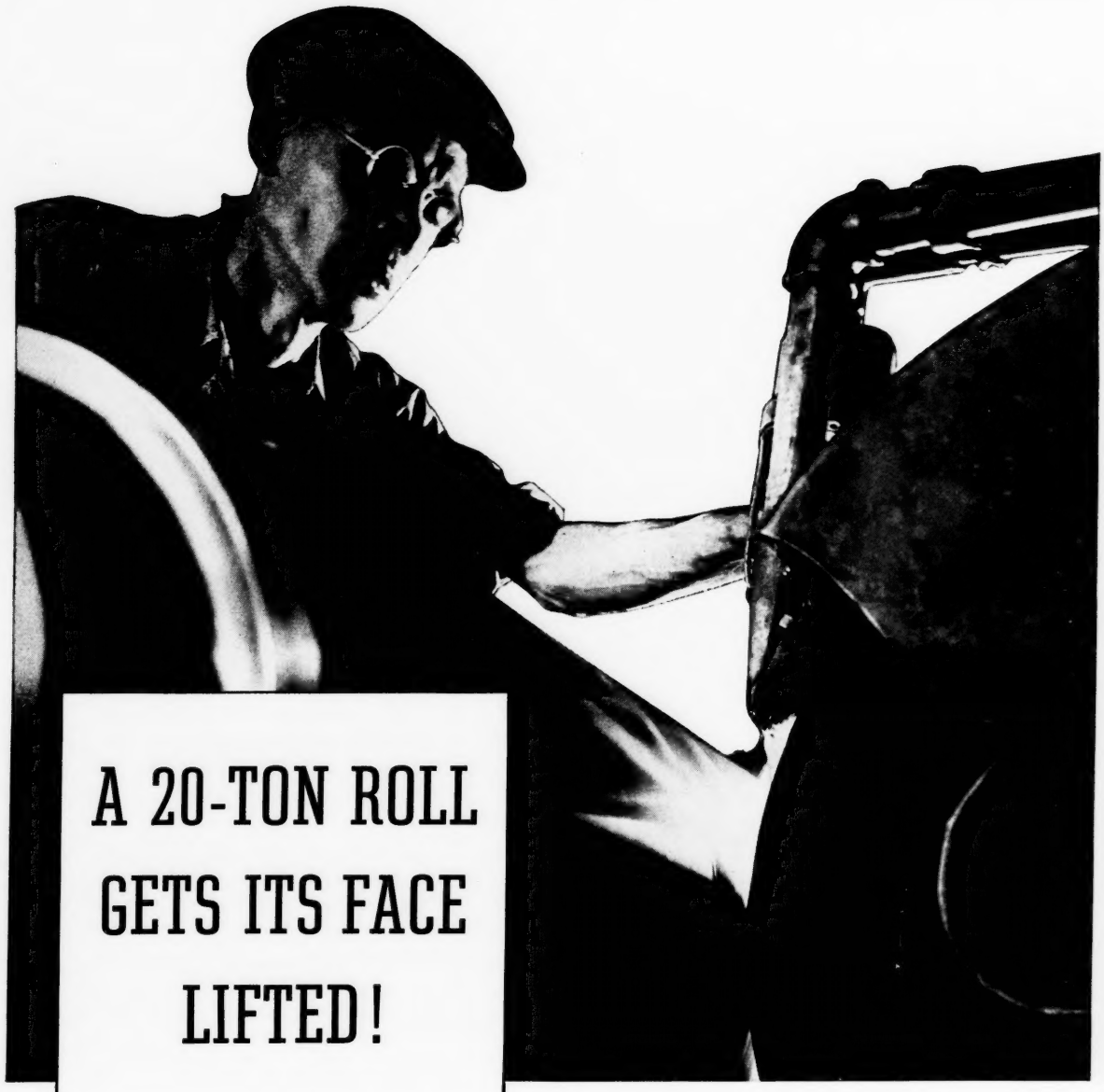
Hail to the Forties! We greet the new decade and report on progress in the decade which has passed. During the Thirties this Company developed and patented the Super-deLavaud process of casting gray iron centrifugally in a metal mold without chill—erected and equipped a headquarters research laboratory at Burlington—completed a broad modernization program with augmented facilities for centrifugal casting at Bessemer and Birmingham, and an extension and improvement of our plant at Chattanooga, particularly for the manufacture of fittings and special castings. We begin our fifth decade better than ever equipped for service.

U.S. cast iron PIPE

for water works, gas, sewerage, drainage and industrial services.

U. S. PIPE AND FOUNDRY CO. General Offices: Burlington, N. J.

Plants and Sales Offices Throughout the U. S. A.



A 20-TON ROLL GETS ITS FACE LIFTED!

WITH most rolled products, the call today is for high precision. Finishes must be as near perfection as possible. But whether it's a thousand foot strip of automobile sheet steel or a piece of thinnest gold foil, the finish on the product can be no better than the finish on the roll which rolls it out.

That is why the finishing of a roll is so delicate and important a business. And it explains why The Carborundum Company has spent a long time in developing the right grinding wheels and procedures for every roll grinding job. Be it a twenty-ton roll for rolling billets, or a twenty-pound roll for jewelers metals, Carborundum engineers can quickly specify the grinding wheels and methods which will give you the best possible finish in the least time . . . and at lowest cost!

If you are confronted with roll grinding problems, or grinding problems of any other kind, we suggest that you let the vast experience and technological resources of The Carborundum Company point the way to a solution that will bring you greater precision, higher production and reduced grinding costs.

FOR PRECISION RESULTS

use

CARBORUNDUM

REG. U. S. PAT. OFF.

ABRASIVE PRODUCTS

THE CARBORUNDUM COMPANY

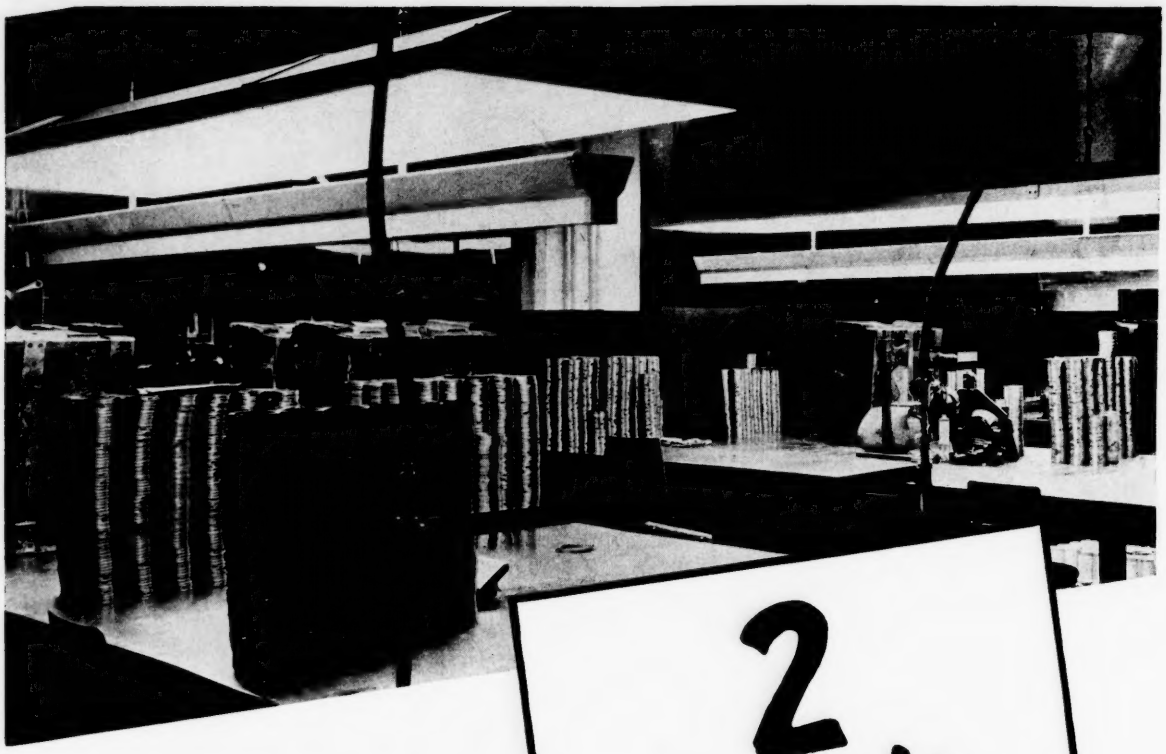
REG. U. S. PAT. OFF.

Niagara Falls, N. Y.

Sales Offices and Warehouses in
New York, Chicago, Philadelphia, Detroit, Cleveland, Boston,
Pittsburgh, Cincinnati, Grand Rapids

(Carborundum is a registered trade-mark of The Carborundum Company)

SUDDEN DEMAND?



2 ways to MEET IT AND BEAT IT

WITH ELECTRIC UTILITY CENTRAL STATION SERVICE

IS yours a business, a plant, a mill, faced with a sudden demand for increased output—rush orders—emergency production?

That's where we come in—*TWO* ways.

FIRST—power capacity. No problem of plant expansion, engine or generating equipment capacity, or other "handcuffs." Your demands may vary like an accordion—but the industry drawing on public utility resources knows the connections are ready when the big pull comes.

SECOND—shift operations. Utility rate structures, as well as capacity, make it not only possible but profitable to meet expanded demands by stretching into two and three shifts, making the most of existing physical property and overhead, at lowered unit costs.

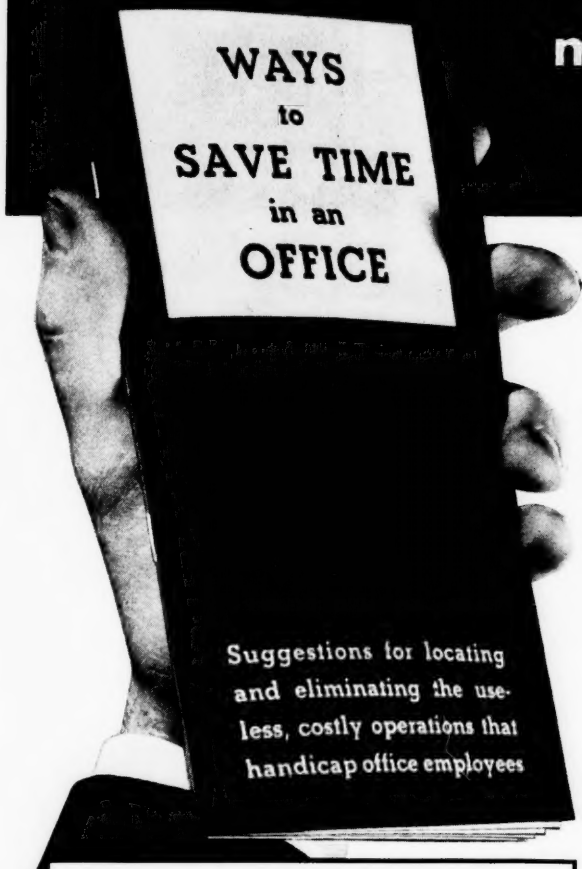
● Our operating companies maintain a staff of power, heat and lighting engineers to work with our customers in just such "late edition" matters as these.

THE COMMONWEALTH & SOUTHERN CORPORATION

ALABAMA - FLORIDA - GEORGIA - ILLINOIS - INDIANA - MICHIGAN - MISSISSIPPI - OHIO - PENNSYLVANIA - SO. CAROLINA

THIRTY PRACTICAL IDEAS

any of which may save you time and money



Thousands of executives in large and small offices have sent for this booklet. The definite, practical ideas it contains have helped many of them eliminate expensive bottle-necks, annoying peak periods, unnecessary duplications, and other handicaps that slow up office routine.

Each idea is clearly explained and easy to understand. The demand for "Ways to Save Time in an Office" has already necessitated a fourth printing. For your free copy, get in touch with your local Burroughs office; or, if more convenient, write on your own letterhead to—

BURROUGHS ADDING MACHINE CO.
6157 SECOND BLVD., DETROIT, MICHIGAN

Typical Comments by Executives Who Have Read This Booklet

"I should like 10 extra copies for distribution to the supervisory force of our organization."

• • •

"The contents of this booklet are one of the topics for discussion at a meeting this week of all of our division auditors."

• • •

"We immediately adopted one idea to eliminate extra handling of figures in our proof work."

• • •

"Some of these ideas helped us get our office on a 42-hour basis."

Burroughs

In The Seaboard Southeast

Industry thrives!

Prospects for the future are bright

Build Your Plant Here!

IN the Southeast there are many locations which offer outstanding advantages for successful manufacturing. It is in this area that industrial development has made such extraordinary growth in recent years.

On every hand one hears of the South's excellent climate, abundant raw materials, good native labor, adequate transportation, and other factors favorable to industry. These things are so well known as to have become commonplace. What is not so well known, however, is that not all communities in the South offer equal advantages. The South embraces an enormous area, with a wide variety of conditions. In this area, as elsewhere, a plant location is good if it meets the requirements of the enterprise under consideration. In selecting a plant location, the correlation of available facts and their application with respect to a particular enterprise require the services of an organization experienced in this type of work. Such an agency is the Industrial Department of the Seaboard Air Line Railway.

We Know the Good Plant Locations

For many years we have made a careful study of this territory, during which time we have accumulated a vast amount of information on available plant sites, natural resources and manufacturing conditions. We are prepared to recommend specific plant locations and to furnish detailed information on raw materials, fuel, power, labor, shipping facilities, and other factors of pertinent interest. As circumstances require, we will make special investigations and reports for responsible companies or individuals. To such prospects we offer all the benefits of an experienced engineering service without cost or obligation.

We cordially invite your investigation of the opportunities afforded by Seaboard territory. All inquiries will be treated as confidential. Address—Warren T. White, General Industrial Agent, Seaboard Air Line Railway, Norfolk, Virginia.

SEABOARD RAILWAY — THROUGH THE HEART OF THE SOUTH

INDUSTRIAL DEPARTMENT

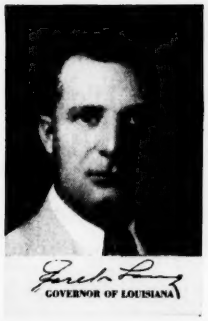
SEABOARD AIR LINE RAILWAY

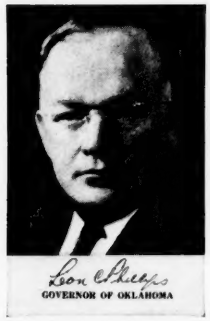
FULL SPEED AHEAD

ICC RULING LIFTS LAST BARRIER TO THE SOUTH'S INDUSTRIAL EXPANSION

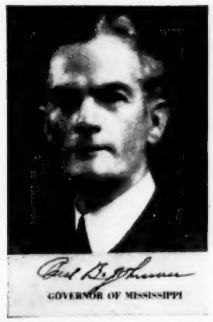
"It is a fair conclusion from the record as a whole, and we accordingly find, that the cost of transporting the articles named in the complaint from producing points in the South into the North, compared with that of transporting like articles within the North, does not justify the maintenance thereon of higher levels of rates than are applicable on like articles within the North."
—Decision of Interstate Commerce Commission in State of Alabama, et al. vs. New York Central Railroad Company et al., November 22, 1939.


GOVERNOR OF NORTH CAROLINA


GOVERNOR OF LOUISIANA


GOVERNOR OF OKLAHOMA


GOVERNOR OF FLORIDA


GOVERNOR OF MISSISSIPPI


GOVERNOR OF SOUTH CAROLINA


GOVERNOR OF TENNESSEE


GOVERNOR OF TEXAS


GOVERNOR OF ARKANSAS


GOVERNOR OF ALABAMA

WE, THE GOVERNORS...

of the Southern States invite industrialists throughout the Nation to take advantage of the recent Interstate Commerce Commission ruling which removes the barrier of unfair freight rates from the South on many important commodities. Other decisions extending this principle to many other commodities are expected. With this barrier removed and with the South's


GOVERNOR OF GEORGIA
Chairman

unmatched natural advantages — unlimited raw materials, lower production costs made possible by a year 'round moderate climate, excellent worker-employer relations and business minded legislation—tremendous industrial expansion is inevitable. Business leaders will find in the Southern States ideal locations for plants serving the United States as well as the rapidly expanding trade with Central and South America.

Southern Governors Conference

Bona Allen Building, Atlanta, Georgia

LAWRENCE WOOD ROBERT, JR., Executive Director **CARROLL DOWNES**, Industrial Consultant

AS CONGRESS MEETS

In this issue appear a number of articles by authorities in basic industries. The writers are in accord in their view of the preparedness of the industrial plant of the country for any eventualities. This in contrast to the confusion of 1914-1918.

In the last twenty-five years our progress towards self-sustainment has been marked. The United States can produce nitrates from the air, fertilizer, fuel, lumber, ships, steel. Food can be grown by our farms in abundant quantities, and crops for chemical processes for our greatest possible needs.

It is apparent, however, in spite of the betterment noticed in the last few months, there is a cloud of doubt and hesitation over industry. Private management, searching the way ahead, is confronted with the seriousness of the situation existing in the conduct of government.

With the debt and guaranteed obligations approaching fifty billions it is time to take stock of what has been accomplished by the New Deal. Disclosures at Washington show some of the mess that exists. America has been asleep at the switch. Frightened by the depression, we have allowed power to be seized by incompetents who do not understand business, nor do they evaluate the fundamental part that private industry has in the lives of every one of us.

What has the New Deal accomplished besides adding enormously to the debt? It is a fair question in this taking of stock. We have numerous unworkable laws that have brought confusion instead of sound progress. We are burdened by excessive taxes with more to come and there is still a great roll of unemployed. The farm problem remains unsolved despite the terrifying cost. Banks are loaded with money and there are few borrowers who want it because men are afraid to venture.

We are bossed by Bureaus that have exhausted the alphabet in the effort to supply identifying symbols, and all the while the budget is unbalanced and likely to remain so for some time in view of obligations undertaken and planned although suggestions have been made to change the style of bookkeeping that expenses may be given the guise of investments. The President asks those who recommend that the budget be balanced how they would go about it. And yet it can be balanced. It can be balanced by reducing expenses which are unjustifiable and not a responsibility of the Federal government.

The amazing thing is the patience exhibited by the people of America in view of the distance we have traveled down the wrong road. It has been said in this space repeatedly it is essential for industry to tell its story; for the constructive influences of America to sound the alarm that absolute calamity may not overtake us.

Consider the subject discussed at a recent meeting of life insurance presidents—that the regulation of the great insurance corporations be taken over by government.

The average man living from day to day appears not to realize the menace inherent, in the course of events shaped either by incompetents or wild-eyed dreamers or both, of his becoming a robot of a totalitarian state.

A contemporary says: "We are fortunate in the fact that our nation is at peace, and therefor the emotional stress and strain as well as the physical interferences which come with war need not stand in our way of clear thinking." It is a time for clear thinking.

We are facing a bright future if business is let alone. A future so vast in its possibilities that previous periods of invention and development will seem only as a beginning to what can be attained.

Congress has met in a session of momentous possibilities affecting the future of America. Members, without regard to party, have it in their power to undo some of the harm done by unwise, unworkable laws. Will they measure up to the opportunity and responsibility? The country awaits the answer.

A Threat to Widows and Orphans

In spite of difficulties in recent years in investing trust funds, the life insurance companies have come through the depression as a bulwark of safety for the widows and orphans whom insurance primarily is intended to benefit.

It will come as a shock to the people of the United States that one of the numerous committees or bureaus of the New Deal proposes to take over the regulation of life insurance companies. These great institutions which have encouraged thrift and made possible the care of those bereaved have by careful management accumulated assets of nearly $30,000,000,000 which stand as a sacred guarantee that the policy a man buys will be paid. They have been for generations as a sheltering rock, but it is now deemed timely for an all-powerful government that has regulated so many things so wisely to step in and regulate them.

Whatever the ultimate purpose may be, it is hardly likely that the policy-holders of America, who in 1939 numbered 64,000,000, having insurance in force of $113,800,000,000, will submit without protest to a further intrustion of government in a field where private management has rendered worthy service and an excellent account of its stewardship of the vast sums entrusted to it.

Senator Wagner has another proposition, which is to put the government in the insurance business in competition with companies operating scores of years and thus rendering the work of these companies still more difficult than it has been.

Hook this up with the recent proposal of the T. N. E. C. to take over insurance company regulation, and it will be seen that the political outreach for power and control has few limitations. It is safe to say that the regulation of life insurance by the Federal government would lead to the regulation and control of every form of insurance.

Mr. A. A. Berle, Jr., Assistant Secretary of State, before the T. N. E. C. is quoted as having said: "The government will have to enter into the direct financing of activities now supposed to be private; and a continuance of that direct financing must be inevitably that the government ultimately will control and own these activities. * * * Over a period of years, the government will gradually come to own most of the productive plants of the United States."

If we continue profligate spending and a policy of interference and regulation of private enterprise, the sole hope for progress and the unemployed, all of the above is possible within a comparatively short time. If we are to destroy the spirit that has made America, the spirit of private initiative, the sacred regard for private property, the belief that a man should be protected in the success he has attained and which was only attainable by his own efforts, we will overlook the threat that lurks in this greed for more power by government. We believe, however, that this latest move will be recognized as a threat to the safety of the nation's policyholders and if adopted it will only be because those who ought to speak out in opposition are silent.

"The South's Resources"

Elsewhere in this issue there is a more detailed announcement of an important special edition the MANUFACTURERS RECORD will publish in the spring.

Nothing comparable to it has been attempted before. The states of the South will be shown in separate colored maps with indexed lists of their raw materials, and there will be another broadside map of the entire South. Accompanying the maps there will be explanatory data relating to climate, transportation, manufactures, finance, agriculture, taxation, power, labor, wages and other material having a vital bearing upon the development of the South as the country's greatest asset.

It will show what is implied by the slogan used for many years by the MANUFACTURERS RECORD —"The development of the South means the enrichment of the nation."

Special issues have not often occurred in the life of this publication. When they have been undertaken our aim always has been to make them "special" in every sense of the word. Replete with authentic information they serve for long periods as guides to men in every line of endeavor whose work finds expression in the creation of new wealth. We believe this number will be a vital link between the commerce of the South and the rest of the United States.

For those in other fields who want to reach the South it will provide a vehicle that will be preserved for years to come because of the importance and in fact the indispensability of its contents.

After nearly 60 years of work in behalf of Southern development, its our belief that the South is prepared, as never before, for a great forward and upward surge of industrial activity that will make its previous progress seem as a beginning.

States here are vying with one another in locating industry. The recent decision of the Interstate Commerce Commission in putting Southern freight rates on a parity with other sections on certain commodities undoubtedly will be extended to a broader list.

The country recognizes in the South, with its American labor and the natural wealth it possesses in its forests, mines and fields, that here is a frontier

of extraordinary promise.

The "South's Resources" shortly to appear well may be given wide distribution.

Newsprint Now Being Made in the South

The beginning of operations at the world's first plant for the manufacture of newsprint from Southern pine by the Southland Paper Mills of Lufkin, Texas, marks a new epoch in Southern industrial development. In it is seen the approaching realization of the dream of Dr. Charles H. Herty to supply the paper needs of American daily newspaper publishers from pine grown in the Southern states.

This country's demands for newsprint are 4,380,000 tons per year. There is required 12,000 tons each and every day to supply the paper on which the news is printed. Most of this at present is made from pulp shipped in from other countries. Our imports of pulp and newsprint average over $170,000,000 per year. Only a comparatively small part of our requirements at present are made from American trees grown in Northern states.

Spruce trees take 50 years to mature sufficiently to be available for pulp purposes, while Southern pine takes but 10 years to grow the necessary bulk. Long used as the base material for Kraft paper and linerboard products, Dr. Herty's tireless experiments finally proved that on the pine lands of the South there grew an asset of almost immeasurable value to this section and the nation in supplying a domestic market of great possibilities. And the opportunity will be better visualized when it is stated that measured by the expected rate of output of the Lufkin mill of 50,000 tons per annum it would take 876 mills of similar capacity to supply American publishers with their newsprint.

The start of this enterprise comes with particular timeliness. Scandinavian countries which heretofore supplied a considerable portion of the pulp and pulpwood from which American newsprint is made, are finding their exports seriously interfered with by the war. There is no certainty of how long the supply can be counted upon, nor with what regularity it can be furnished.

The question may be raised, as it has been raised before, of how long the supply of pine timber may be expected to last if mills increase to anything like the extent that may be reasonably expected. Modern mill management, which in the last few years has invested $200,000,000 in the Southern states for the manufacture of pulp for Kraft paper and linerboard material, looks first to an adequate supply of raw materials extending over the years. It is their practice to buy a sufficient acreage as a backlog for future requirements, and in the meantime make contracts with farmers for their daily cordage needs. The most modern forest management and replanting methods are in effect, and these assure not only that the forests will not be stripped, but that there will be pine in abundance for future needs.

Dr. Herty pointed out more than once to this writer that the utilization of this great pine resource of the South in the way proposed is a temporary use of capital for only so long as it takes for a new crop to mature. Pine trees in many cases grow rapidly on land unsuited for anything else, and a new outlet has been opened to farmers for the utilization of marginal acres and a new cash crop. As an indication of the amount of replanting being done, the demand for pine seedlings at experimental stations has been greater than the supply.

The Juggernaut Proceeds

Wendell L. Willkie in a speech before the National Association of Manufacturers said:

"The most alarming feature of this concentration of power in the Federal Government is the creation of omnipotent commissions to exercise it. The new fields of Federal control are administered by small Boards or executive commissions, usually appointed by the President and responsible to no one but the the President. They are part of the Executive Department. But their function is not executive only. They have two additional functions: one is legislative, the other is judicial. These commissions write the rules which make the laws effective. Then they administer the rules; and when the rules are violated, they sit in judgment on the violators."

A Ten Year Program

The Southern Governors' Conference at a recent meeting in Atlanta appointed a committee to draft a 10-year program that will balance money crops with food, feed and fertility crops; balance crops with livestock; balance farms with factories; balance production progress with marketing progress, as well as balance economic gains with gains of human welfare.

Industry and agriculture must advance together if either or both are to attain their objectives.

With similar energy and initiative to that shown in the fight for parity of freight rates, the program will go a long way toward success and the South as a whole will benefit more than from any work of recent years.

The movement comes at an opportune time. It may be expected that bankers, newspapers, educational institutions and farmers who are so vitally concerned will all lend full cooperation.

A SQUARE DEAL IN PLACE OF THE NEW DEAL

BY

Dr. John J. Wicker

THE New Year comes to us with two hands—in one is success and in the other is failure. We can take either hand.

1940 finds much of Europe, and the Far East at war.

We have problems without war that are almost as serious.

This is election year in the United States and we never had problems calling for more serious attention.

In 1930 the census reported 48,829,920 gainfully employed.

In September 1939 the National Industrial Conference Board reported employment as 45,263,000.

Thus in 1930, the year of the great depression, when *no public funds were being handed out to millions of people out of work and before the New Deal was born, there were* 3,566,920 *more employed than with all the New Deal taxing, hiring and spending in* 1939.

Public debt is piling up by billions.

The national budget is out of balance and we are going, by billions of dollars, deeper and deeper into debt every year.

The Government has gone far into competition with business and is undertaking to regulate every thing else.

Every man with a pocketbook is filled with fear.

Those who have no pocketbooks seem not to care.

Money is cheaper than I ever knew it. Every educational institution endowment has been reduced by about 40% in income because money is so cheap. This is true of all other endowed institutions.

Cheap money and good times never go together—*never.*

It is tragic and dishonest to usher in any kind of deal that destroys values.

Before the New Deal we got three and four percent for our money in the saving's bank. Now we get one percent for any amount below five thousand dollars: above this sum *nothing!* The banks cannot use it, and therefore do not want it.

Money in Virginia used to be six percent. Good private paper will get all you want today at from four to four and a half percent, and hundreds of millions of dollars are loaned at two percent or less. This is certainly a New Deal and is not only hard on the big monied man, but on the small saving's depositor as well. Before the New Deal days, banks begged for savings depositors and advertised to get them.

Insurance companies are hard put to get returns for millions of policy holders' invested money, but they have come through the depression with the people's money unimpaired and stand as a bulwark of protection for the widows and orphans. Now the politicians want to regulate them.

Today, banks with forty-five million depositors are bulging with *idle* money.

Business is eager to go. Building would boom if people were not frightened by the cost.

Products are plentiful.

Resources know no limits.

Opportunity was never greater.

We could multiply American prosperity as never before if permitted to do so—How?

Sound business methods in Washington will do the trick, but no trick will do it without sound business methods.

The *individual* must be recovered. You cannot deal with men as a whole. The totalitarian state is doing it and in so doing is destroying the strong without strengthening the weak.

The individual is everything. Each man has his own value.

To hitch a racehorse up with an ox would wreck any race, yet that is exactly what is being attempted and it isn't fair to either the ox or the horse.

The ox has the Government's blue ribbon and the racehorse is not allowed to run.

Automobiles differ in price, so does every other commodity, yet there is an effort to put the same dollar mark on every man by paying another man to stamp it on him—and this with the Government's approval.

It is a sin against any man to demand for him a fine automobile when he has only a bicycle pocketbook and sometimes not even that. You upset him without setting him up.

Washington is cultivating a pernicious appetite without doing anything to supply the pantry. They are invading another man's pantry to feed a man who has been given political tonic in order to give him a rapacious appetite. Don't blame the patient—change the doctor.

When appetite makes more belly than brains a man is in danger of becoming a communistic animal.

I am for the individual and it is up to him to prove his worth. Our country has never failed to afford every man the largest opportunity of any country in the world.

If we are determined to regiment mankind and group them, and put artificial labels on them as to their worth, then we should at least have several grades in each group.

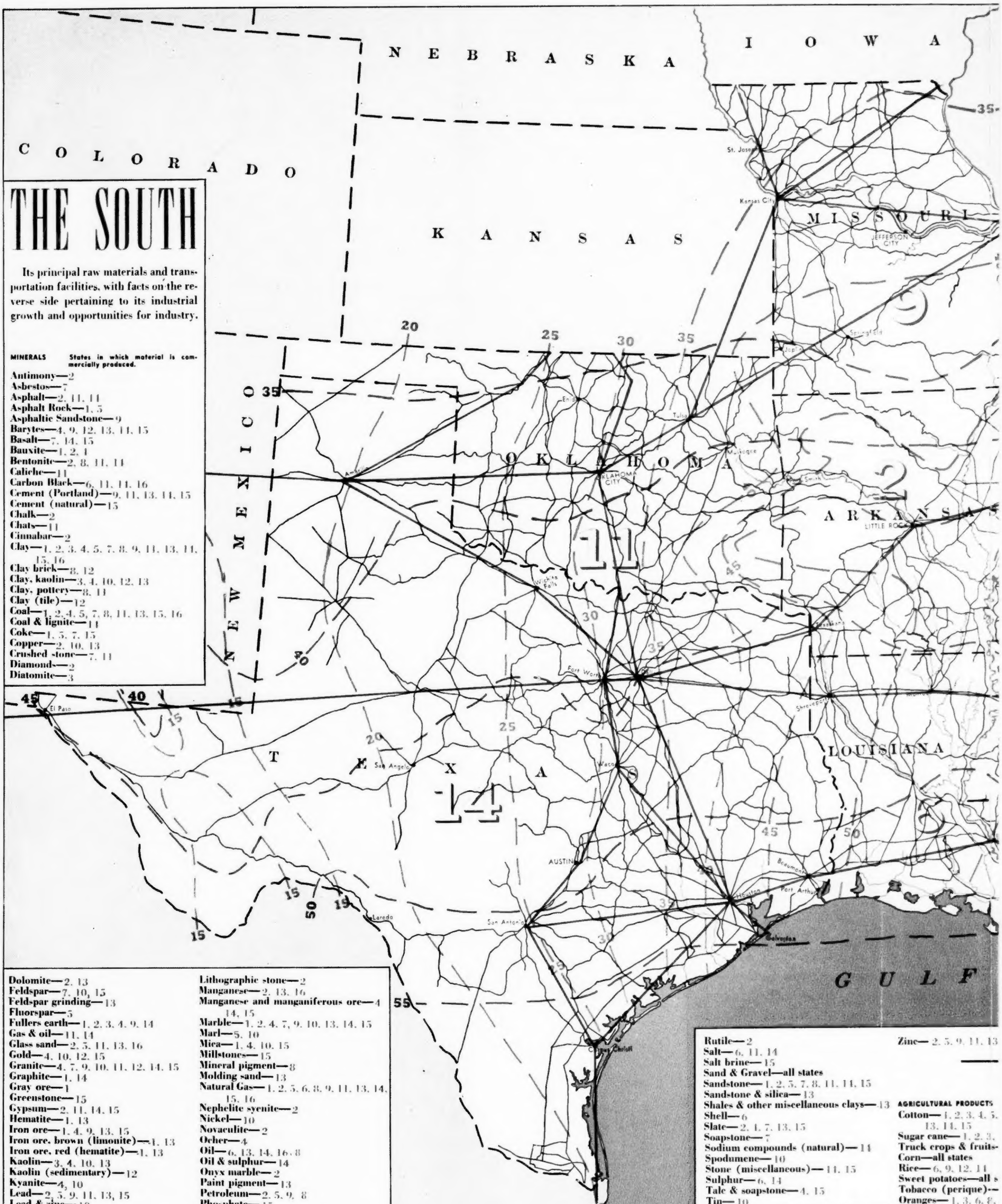
What right has a man to draw the same wages as a first class carpenter if he is only an inefficient jackleg?

God says he is going to reward every man according to *his* works, but we have a Government that's going to reward him, work or no work.

(*Continued on page* 62)

THE SOUTH

Its principal raw materials and transportation facilities, with facts on the reverse side pertaining to its industrial growth and opportunities for industry.



MINERALS States in which material is commercially produced.

Antimony—2
Asbestos—7
Asphalt—2, 11, 14
Asphalt Rock—1, 5
Asphaltic Sandstone—9
Barytes—4, 9, 12, 13, 14, 15
Basalt—7, 14, 15
Bauxite—1, 2, 4
Bentonite—2, 8, 11, 14
Caliche—14
Carbon Black—6, 11, 14, 16
Cement (Portland)—9, 11, 13, 14, 15
Cement (natural)—15
Chalk—2
Chats—11
Cinnabar—2
Clay—1, 2, 3, 4, 5, 7, 8, 9, 11, 13, 14, 15, 16
Clay brick—8, 12
Clay, kaolin—3, 4, 10, 12, 13
Clay, pottery—8, 11
Clay (tile)—12
Coal—1, 2, 4, 5, 7, 8, 11, 13, 15, 16
Coal & lignite—14
Coke—1, 5, 7, 15
Copper—2, 10, 13
Crushed stone—7, 11
Diamonds—2
Diatomite—3
Dolomite—2, 13
Feldspar—7, 10, 15
Feldspar grinding—13
Fluorspar—5
Fullers earth—1, 2, 3, 4, 9, 14
Gas & oil—11, 14
Glass sand—2, 5, 11, 13, 16
Gold—4, 10, 12, 15
Granite—4, 7, 9, 10, 11, 12, 14, 15
Graphite—1, 14
Gray ore—1
Greenstone—15
Gypsum—2, 11, 14, 15
Hematite—1, 13
Iron ore—1, 4, 9, 13, 15
Iron ore, brown (limonite)—1, 13
Iron ore, red (hematite)—1, 13
Kaolin—3, 4, 10, 13
Kaolin (sedimentary)—12
Kyanite—4, 10
Lead—2, 5, 9, 11, 13, 15
Lead & zinc—10
Lignite—2
Lime—1, 4, 7, 9, 11, 13, 14, 15
Limestone—1, 2, 3, 4, 5, 6, 7, 9, 10, 12, 13, 14, 15, 16
Limonite—1, 13
Lithographic stone—2
Manganese—2, 13, 16
Manganese and manganiferous ore—4, 14, 15
Marble—1, 2, 4, 7, 9, 10, 13, 14, 15
Marl—5, 10
Mica—1, 4, 10, 15
Millstones—15
Mineral pigment—8
Molding sand—13
Natural Gas—1, 2, 5, 6, 8, 9, 11, 13, 14, 15, 16
Nephelite syenite—2
Nickel—10
Novaculite—2
Ocher—4
Oil—6, 13, 14, 16, 8
Oil & sulphur—14
Onyx marble—2
Paint pigment—13
Petroleum—2, 5, 9, 8
Phosphate—15
Phosphate rock—2, 3, 13
Pyrites—9, 15
Pyrophyllite—10
Quartz—2, 7, 15
Quicksilver—14
Rutile—2
Salt—6, 11, 14
Salt brine—15
Sand & Gravel—all states
Sandstone—1, 2, 5, 7, 8, 11, 14, 15
Sandstone & silica—13
Shales & other miscellaneous clays—13
Shell—6
Slate—2, 4, 7, 13, 15
Soapstone—7
Sodium compounds (natural)—14
Spodumene—10
Stone (miscellaneous)—14, 15
Sulphur—6, 14
Talc & soapstone—4, 15
Tin—10
Titanium minerals (apatite & ilmenite)—15
Tripoli—1, 2, 4, 9, 11
Tripoli & rottenstone—13
Volcanic ash—11
Zinc—2, 5, 9, 11, 13

AGRICULTURAL PRODUCTS

Cotton—1, 2, 3, 4, 5, 13, 14, 15
Sugar cane—1, 2, 3,
Truck crops & fruits-
Corn—all states
Rice—6, 9, 12, 14
Sweet potatoes—all s
Tobacco (perique)—
Oranges—1, 3, 6, 8,
Peanuts—1, 2, 3, 4, 14, 15
Soybeans—1, 2, 4, 5 12, 13, 15, 16
Tung oil—1, 3, 4, 6,


ILLINOIS
INDIANA
OHIO
PENNSYLVANIA
N.J.
DEL.
KENTUCKY
VIRGINIA
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
GULF OF MEXICO
ATLANTIC OCEAN
WASHINGTON
RICHMOND
CHARLESTON
NASHVILLE
ATLANTA
MONTGOMERY
COLUMBIA
TALLAHASSEE
RALEIGH
ANNAPOLIS
BATON ROUGE
FRANKFORT
St. Louis
Louisville
Covington
Wheeling
Parkersburg
Clarksburg
Cumberland
Huntington
Ashland
Lynchburg
Petersburg
Winston-Salem
Charlotte
Memphis
Chattanooga
Birmingham
Macon
Columbus
Augusta
Savannah
Meridian
Jackson
Mobile
Pensacola
Jacksonville
Orlando
Tampa
St. Petersburg
West Palm Beach
Miami
3, 15
, 6, 8, 9, 10, 11, 12,
, 1, 6, 8, 12, 14
—all states
states
—6
, 14
6, 8, 10, 11, 12, 13,
5, 6, 7, 8, 9, 10, 11,
, 8
Tobacco— 1, 2, 3, 4, 5, 7, 9, 10, 11, 12, 13, 15, 16
Grapefruit— 3, 14
Pecans— 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15
TIMBER
Long leaf pine— 1, 6, 10, 12, 14
Long leaf slash— 1, 3, 4, 8
Long leaf cypress— 3, 4
Short leaf hardwoods— 1, 4, 7, 8, 9, 12, 2
Short leaf loblolly hardwoods— 1, 4, 6, 8, 11, 12, 2
Mixed upland hardwoods— 1, 8, 9, 10, 16, 5, 2
Slash cypress— 3
Loblolly hardwoods— 2, 3, 4, 6, 8, 10, 14, 15
Mixed bottomland hardwoods— 2, 3, 5, 6, 8, 9, 10, 12, 16
Cypress hardwoods— 3, 13
Cypress tupelo— 6
Oaks, mixed hardwoods— 6, 8, 11, 2
Red gum, mixed hardwoods— 6, 8
Short leaf— 7, 10, 14
Virginia pine hardwoods— 12, 15
Post oak— 5, 14
Mixed hardwoods— 5, 13, 15, 16
NAVAL STORES— 1, 3, 4, 6, 12, 8, 10, 14
Natural Gas is available for consumption in the following states: 1, 2, 4, 5, 6, 7, 8, 9, 11, 13, 14, 15, 16
Railroads
Navigable waterways
Airlines
Average annual rainfall
Average winter temperature
25 0 25 50 75 100 125 150
E. MORRELL

The South and its Opportunities for Industry

The map and article published herewith of the entire South summarizes in condensed form and completes the series of similar features for each of the **16** *Southern states which were printed in the* MANUFACTURERS RECORD *between May* **1938** *and September* **1939.** *The purpose of this material has been to set forth in graphic form salient facts about the South essential to those firms seeking new locations as well as to countless others interested in the markets and resources of this region. Reprints of the separate states are still available for ten cents each and the entire series will be republished with supplementary material in the spring in a special issue entitled THE SOUTH'S RESOURCES.*

THE South has been recognized by the MANUFACTURERS RECORD for many years as comprising sixteen states including Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

With a total area of 969,237 square miles, the South embraces more than 32 per cent of the country's entire area. Of this, water occupies 24,147 square miles or about 2½ per cent of the total area and almost 50 per cent of the whole country's water area.

The population, estimated at 44,418,000 in 1937 has an average density of 63.08 persons per square mile exclusive of the District of Columbia: the density by state ranges from Texas' low of 22.2 to Maryland's high of 164.1 per square mile. The negro population amounting to 9,552,815 comprises nearly 25 per cent of the region's total population with the highest, 50.2 per cent in Mississippi and the lowest, 6.2 per cent in Missouri. Indians numbering nearly 120,000 are located principally in North Carolina and Oklahoma while virtually all the 698,000 Mexicans are in Texas.

Climate

EXTENDING over as wide an area as the South does its climate is understandably varied but is essentially temperate and equable. On the map overleaf is indicated the average annual precipitation in inches and average winter temperature in Fahrenheit degrees. Only in limited areas is the temperature and rainfall extreme in either direction.

Transportation

THE transportation facilities of the South are among the most advantageous features this region has to offer.

Railroad mileage in the sixteen states aggregates almost 100,000 miles and few or no counties within each state are without rail transportation.

Highways within the state and county systems approximate three quarters of a million miles and more than one third, or over 250,000 miles, are all-weather surfaced over which extensive passenger and freight routes connect the small communities as well as the large cities inside and outside the South.

With 2,816 miles of general coast line, which is considerably more than half the entire country's coast line, there are more than 30 ports in the Southern states which engage in foreign trade and whose combined imports and exports were valued at $1,300,406,282 in 1938. These ports are strategically located and possess adequate modern facilities for the handling of a vast number of commodities. In addition there are numerous other ports engaged in coast wise traffic. Complementing the ocean ports is another important factor in the South's transportation facilities, i. e., the great network of navigable waterways extending throughout every one of the sixteen states and greater by far than any other group of states in the country.

Finally, with 718 airports the South is traversed by more than 20 commercial air routes operated by 11 different companies exclusive of one company which operates to Bermuda, Latin and South America, and Europe. These services provide rapid and direct communication between the South and all other parts of the country.

Manufactures and Finance

THE total value of the South's manufactured products in 1937, the latest year for which statistics are available, was $11,454,794,098 representing an increase of $2,986,578,380 over the $8,468,215,718 value in 1935, a gain of approximately 35 per cent.

Of the 23 industries each having an output in excess of one hundred million dollars, petroleum refining occupied first place with $1,003,197,624. Other outstanding manufacturers included: cotton manufactures, $931,686,877; cigarettes and tobacco, $878,406,556; meat and poultry packing, $446,289,937; lumber and timber products, $332,919,812; printing and publishing, $313,233,031; bread and bakery products, $258,776,315; flour and grain mill products, $242,793,442; men's and boys' clothing, $237,441,500; cottonseed oil cake and meal, $224,225,320; machinery and machine shop products including tools (not electric), $210,894,359; rayon manufactures (excluding pulp), $172,272,433; dairy products, $170,187,828; chemicals not separately classified, $168,837,459; boots and shoes (not rubber), $167,523,473; furniture, store, and office fixtures, $141,624,472; fertilizers, $134,669,489; non-alcoholic beverages, $132,847,948; alcoholic beverages, $132,422,808.

The cost of materials, fuel, electric energy and contract work used in the South's manufacturing totaled $7,230,455,903 while the 1,800,405 wage earners had a payroll of $1,565,545,722. The number of establishments with an annual output exceeding $5,000, totaled 34,946 in 1937, an increase of 803 over the 1935 number compared with a decline of 3,120 establishments for the rest of the country during the same period.

The 4,977 Southern banks reporting to the Comptroller of the Currency on June 30, 1938, had aggregate resources totaling $9,480,572,000 and individual deposits of $8,280,794,000 while the capital stock amounted to $599,682,000. Bank transactions of the 71 clearing house exchanges were $36,403,113,000 and savings deposits were $2,288,891,000.

Federal tax receipts for the calendar year 1938 amounted to $1,357,516,443 of which corporation income tax accounted for $212,538,999.

Agriculture

THE South's cash farm income in 1938 of $2,638,029,000 included $1,426,815,000 for crops from 120,517,700 acres and $943,003,000 from livestock and livestock products.

Cotton comprises the South's principal crop and 11,211,000 bales from 23,590,000 acres in 13 states yielded a cash income of $479,902,000 in 1938 while 4,984,000 tons of cottonseed added an additional $74,192,000. Other important crops with their cash income in 1938 were: 1,325,211,000 pounds of tobacco, $273,394,000; 71,488,000 bushels of sweet potatoes, $14,196,000; 6,638,000 tons of sugar cane for sugar, $18,556,000; 43,203,000 bushels of rice, $28,639,000; 2,084,900 pounds of peanuts, $39,951,000; 722,270,000 bushels of corn, $41,446,000; 168,506,000 bushels of wheat, $88,442,000; 152,587,000 bushels of oats, $5,360,000; and 18,821,000 bushels

of peaches, $13,421,000. The total estimated income from commercial and non-commercial truck crops was $107,674,000.

The number of livestock in the South in 1938 was 62,461,000 valued at $1,546,683,000. Making up this total was 23,192,000 cattle valued at $656,382,000 including 7,926,000 cows and heifers kept for milk and worth $313,779,000; 14,926,000 sheep with a value of $73,684,000; 17,714,000 swine valued at $145,405,000; 2,866,000 horses valued at $217,894,000; and 3,763,000 mules worth $453,320,000. Cash farm income from dairy produce amounting to $412,947,000 included $251,061,000 from milk, $110,782,000 from eggs, and $51,104,000 from chickens. Factory production of dairy products in 1937 included 249,859,000 pounds of evaporated milk, 51,366,000 pounds of condensed milk, 36,494,000 pounds of powdered milk, 80,876,000 pounds of cheese, and 210,841,000 pounds of butter.

Among additional crops grown in the South of value for industrial conversion or processing are grapefruit, oranges, pecans, tung nuts, castor beans, soy beans, and flax.

Fisheries

EVERY one of the South's ten coastal states have important commercial fisheries whose combined catch in 1937 amounted to 838,995,400 pounds valued at $20,587,604. The canned product and by-product values were $10,679,432 and $5,134,619 respectively while the principal species caught were oysters, shrimps, crabs and menhaden in the waters adjoining these states' tidal shore line of 8,125 miles.

Timber and Naval Stores

THE land area of that part of the South which is regarded as a timber region† totals 465,143,000 acres, and of this, forest land occupies 210,600,000* acres. However, not all this area is productive. Commercial forest land is confined to 217,031,000 acres with a sawtimber area of 100,340,000 acres—25,125,000* acres old growth, and 71,565,000* acres second growth—plus a cordwood area of 51,960,000 acres.

The stand of sawtimber amounting to 401,970,000,000 board feet comprises 214,630,000,000* board feet of softwoods and 171,940,000,000* board feet of hardwoods. Of the softwoods, 54,800,000,000* board feet are old growth and 159,830,000,000* board feet are second growth, while the hardwoods include 78,625,000,000* board feet old growth and 93,315,000,000* board feet second growth.

Southern pines account for more than 196,000,000,000* board feet of the softwood sawtimber stand. Other softwoods include 11,405,000,000* board feet of cypress, 2,180,000,000* board feet of hemlock and almost 5,000,000,000* board feet of miscellaneous softwoods. Among hardwoods, oaks predominate with more than 65,000,000,000* board feet; red gum totals 27,405,000,000* board feet; tupelo and black gum, 20,360,000,000* board feet; yellow poplar, 9,190,000,000* board feet; and mixed hardwoods closely approximate 50,000,000,000* board feet.

On the cordwood area alone is an estimated 187,560,000* cords—63,105,000* cords of softwood and 125,455,000* cords of hardwoods. But in the sawtimber area are 646,740,000* cords, including 207,805,000* cords of softwood and 438,935,000* cords of hardwood. Together these total 834,300,000* cords, and if 15,850,000 cords on restocking areas and 278,775,000 cords of cull trees are added the full total of timber in the South exceeds 1,210,000,000 cords.

The total lumber sawed in 1938 by 9,661 active mills amounted to 10,090,837 million board feet of which 7,687,439 million board feet was softwood and 2,403,398 million board feet was hardwood. Employed in the South's 4,287 lumber industry establishments in 1937 were 167,759 wage earners with a payroll of $93,025,745 and the products were valued at $333,099,812.

Among the most important forest industries is the production of naval stores which is limited to the eight most southern states and produced 534,291 fifty-gallon barrels of gum turpentine and 1,792,951 five-hundred-pound barrels of rosin during the 1938-1939 season.

Mining and Minerals

THOUGH the value of mineral production in the South has increased at an almost phenomenal rate during the past 25 years and now comprises nearly half the value for the entire country, these figures in themselves do not adequately portray the mineral situation of this region. The aggregate value of the South's mineral production in 1937 (the latest year for which such figures are available) was $2,066,933,227 but of this, non-metallic minerals including fuel minerals, which are usually of lower value than metals, comprised the major part.

Approximately half the nation's bituminous coal is produced in the South, over 167,000,000 tons being the output in 1938. This, together with an estimated petroleum production of 767,178,000 barrels in 1939 and natural gas which reached 1,694,424,000,000 cubic feet in 1937 means that the South supplies about two thirds of the country's fuel requirements. Reliable estimates of commercial reserves indicate an ample supply for continuing demands throughout the years to come. Insofar as petroleum is concerned the new horizons constantly coming to light show the reserves always to be increasing. During the past year new sources have been found in Mississippi and it is anticipated that other states will come into production in the future.

On the accompanying map is indicated, by state, numbered in alphabetical order, the location of the South's commercial mineral production but in addition, there are numerous other deposits of many of these minerals which are known or believed to be of a commercial character. As exploratory surveys and analyses continue there is reason to believe that a large number of new deposits and new minerals will be located for the known varieties of the South's commercial minerals now exceed one hundred in number.

Electric Power

THE total generating capacity of the South's 1,127 public utility power plants at the beginning of 1939 was 9,227,100 kilowatts. Operated by 490 companies, this total was made up by 384 steam power plants capable of developing 5,365,387 kilowatts, 218 hydroelectric plants able to generate 3,400,246 kilowatts, 470 internal combustion engine plants with a generating capacity of 274,486 kilowatts, and 55 combination plants capable of 186,981 kilowatts. During 1939 many of these plants have been expanded and others have been constructed or projected so that the total mentioned above will soon be enlarged considerably. In addition to these facilities, additional supplies can be obtained through the network of intercommunicating state systems.

In 1938 the production of electric power in the South amounted to 26,779,660,000 kilowatt hours including 16,183,856,000 kilowatt hours produced by fuels and 10,595,804,000 kilowatt hours produced by water power.

Taxation

WITH such a large area to cover and so many taxing authorities involved it is virtually impossible to cite here the variety and range of the different taxes to which an industrial concern might be subjected. As a general rule however, it can be definitely stated that the Southern states are fully cognizant of the desirability, if not necessity, of keeping taxes as low as possible in order to induce new industries to settle within their respective borders.

Eight of the states offer some form of tax exemption to new industries and for additions or expansions to those now located in the area.

Corporation income tax ranges from none in some states to as much as six per cent in about two states. At least one state having no income tax imposes a gross sales tax. On the other hand, some states with a higher income tax have no real estate tax.

Practically every state has a corporation franchise tax which is very similar in its graduated form and usually carries a provisional minimum of ten dollars.

Several of the mineral producing states levy a severance tax or gross production tax which varies with the commodity.

Local tax rates vary considerably from less than 50 cents; but in only a few instances do they exceed four dollars.

Labor

WITH the trend toward decentralization in industry it is important to note that the average density of population in the South is 63 per square mile and large cities are very few—only two having a population in excess of 800,000. There are three cities whose population ranges between 400,000 and 500,000; six between 250,000 and 325,000; twelve between 100,000 and 250,000; and 25 cities between 50,000 and 100,000 population.

Another important factor in the labor situation is the high percentage of native white people—97.39 per cent compared to a national average of 87.7 per cent. Native whites whose parents were born in this country amount to 91.19 per cent of all whites while those of foreign parentage total only 3.63 per cent. Foreign born whites comprise only 2.61 per cent. As a result, the South's population is made up of loyal, intelligent and hardworking Americans.

†Includes only the eastern parts of Oklahoma and Texas where the principal commercial forest areas of those states exist.

*Figures for Maryland and Missouri are *not* included since they are unavailable.

STEEL IN 1939

BY

Walter S. Tower,

Executive Secretary, American Iron and Steel Institute

DURING the closing months of 1939 the production of steel ingots in the United States rose to new heights for all time.

For the year as a whole the output is estimated at 46,800,000 gross tons, compared with 28,200,000 gross tons in 1938 and with 50,318,000 gross tons in 1937.

The average rate of operations for the first quarter of the year was 54.5 per cent of capacity. For the second quarter it stood at 50.8 per cent, rising to 62.2 per cent in the third quarter and to an estimated 91.2 per cent in the fourth quarter.

Slightly more than one third of the year's output of steel was produced in the final three months. October, November and December broke all earlier monthly records of tonnage produced.

The upturn in steel activity started in May and continued steadily through the summer. Early September operations were greatly accelerated coincident with the outbreak of the war in Europe. However, the war exerted only an indirect influence on the expansion of steel production. According to reliable opinion few orders for steel have been placed by any of the belligerents.

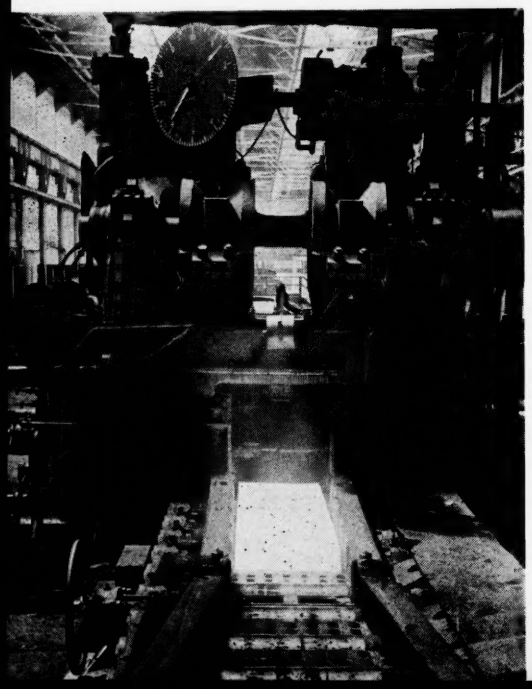
One important cause of the sharp upturn was the prompt decision of steel users to rebuild their stocks of steel. In many cases these stocks were subnormal, a condition which called for prompt correction in view of the indicated increase in industrial activities and possible uncertainties of continued quick deliveries. No evidence has appeared that inventories of steel are being increased beyond reasonable levels relative to current use.

Two other specific causes of the rise in steel output to such high levels was the great volume of automobile production in the last quarter, and the unexpectedly large increase in demand from the railroads. Shipbuilding also continued at an active rate.

With advancing operations in the mills there were steady gains in employment and earnings of wage earners during the year.

Average employment for 1939 was 482,000, but in October the total stood at 545,000. Average weekly earnings in October were $32, a gain of $8 per week since mid-summer. Employees were working an average of 38 hours each week compared with 31 hours in October of 1938. Average hourly earnings at 84 cents were the highest for any year in the history of the industry, and total payrolls in the industry in 1939 totalled $810,000,000 against $600,000,000 in 1938.

Rising operations have resulted in some improvement in earnings. During the past ten years the annual return on invested capital in the steel industry has averaged only 2.4 per cent. In the first half of 1939 the industry earned $25,450,000, equivalent on an annual basis to a return of 2.1 per cent on capital investment. This compares with a loss of $18,000,000 in the first half of 1938.

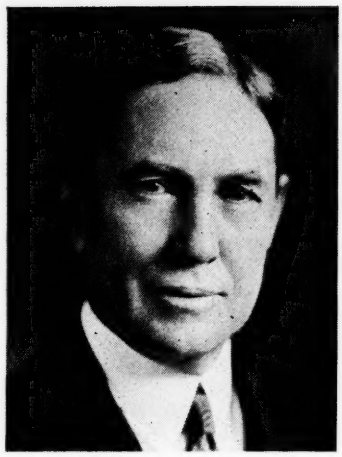


Further gains in earnings for most companies were reported for the third quarter and continued betterment is expected for the fourth quarter.

During September the prices of many kinds of raw material used in the steel industry advanced sharply. However, the prevailing published prices of finished steel were reaffirmed by leading companies both for the fourth quarter and for the first quarter of 1940. That action was widely regarded as a desire on the part of the steel companies to avoid any step which might stimulate inflationary tendencies in commodity prices. It is worth noting that although average steel prices are less than 3 per cent above the 1929 level, average wage rates in the industry are nearly 30 per cent over 1929.

In November various executives in the steel industry appeared before the Temporary National Economic Committee in Washington in connection with the Committee's study of the industry. The testimony of the executives constitutes a full and frank record, illuminating many phases of the steel business, and effectively disposing of many unfounded, but persistent, popular notions pertaining to practices and conditions in the industry. Chiefly the testimony made clear that keen competition exists in the industry in all its phases, including prices. Another point emphasized by the steel executives is that the industry has no desire for war business.

In various respects, therefore, the steel industry approaches the end of 1939 in a more satisfactory condition than has been the case for several years.



SHIPBUILDING AT HIGHEST POINT SINCE WORLD WAR

BY

H. Gerrish Smith

President, National Council of American Shipbuilders

AMERICAN shipbuilding received additional impetus during 1939, with a result that there was more tonnage under construction at the end of the year and a larger volume of employment in the building and shiprepairing yards than at any time in the country's history except during the period of the World War.

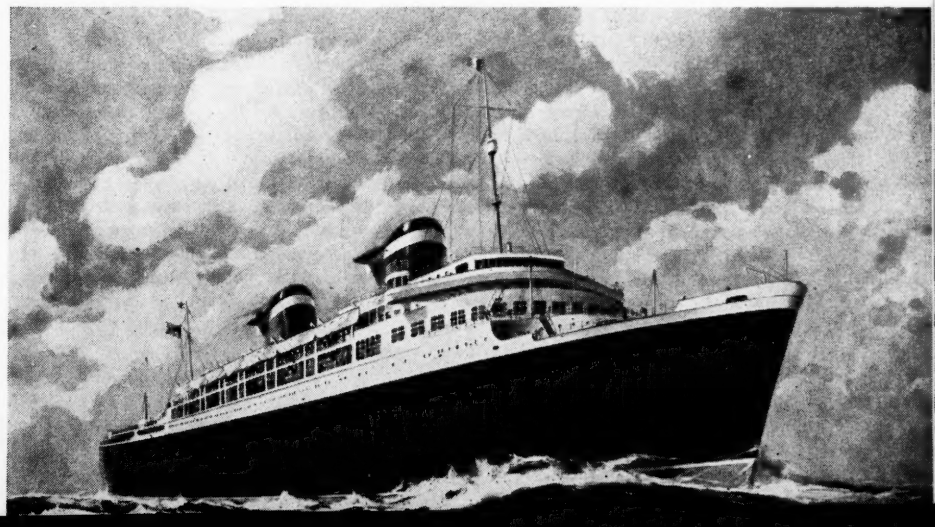
In addition to the naval building program, the Government through the Maritime Commission has now awarded contracts directly or in cooperation with private owners for 141 seagoing commercial vessels, representing almost a third of the projected program of fifty ships a year for ten years. That portion of the program already under way represents an expenditure of approximately $350,000,000 and means roughly that the shipyards are placing orders for materials estimated at about $175,000,000, which is being expended in a wide variety of other industries.

Materials entering into this ship construction program are purchased by the shipyard or by subcontractors of the shipyards from virtually every State in the Union. If the complete program of the Maritime Commission is carried out, an expenditure of between $1,000,000,000 and $1,250,000,000 will be involved, of which approximately one half will be expended by the shipyards for materials. The manner in which employment is being stimulated may be seen from the fact that approximately 80 per cent of the cost of the finished vessel goes for labor, either in the shipyard itself or in the industries of the subcontractors from whom the shipyard obtains its supplies.

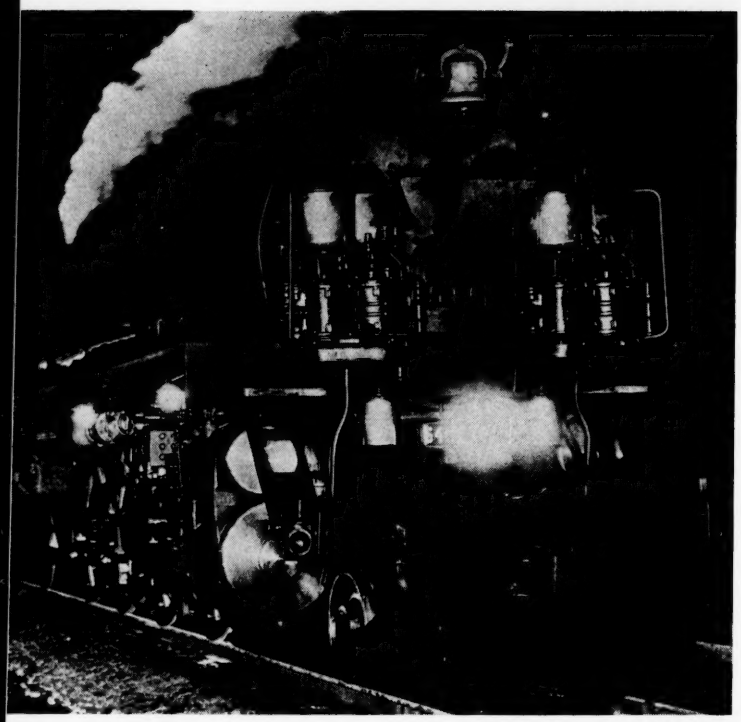
The National Council of American Shipbuilders on the basis of a recent survey agrees with the policy of the Maritime Commission recently indicated by its chairman that there are ample building facilities in active operation or that can be made readily available from private capital to take care of any reasonable demands that may be made on the industry. If an augmentation of the current program should prove necessary, additional facilities can be provided by an expansion of those already in active service. It may be borne in mind in this connection that the number of building ways possessed by the active shipyards of the country is not necessarily the criterion of the industry's capacity, which depends also on machine shops and building equipment, on the ability of yards to obtain trained personnel and on the ability of allied groups and industries to provide the materials required. The yards have kept their plants and equipment in a thoroughly modernized condition during the slack years which preceded the awarding of the Maritime Commission contracts and the industry may be regarded as in a high state of efficiency.

Vessels now under construction embody many advances in design and building over vessels of a few years ago. It can be said perhaps for the first time in modern history that there is now a distinct American practice in the design of ocean going vessels. This embraces such matters as the development of welding in ship construction, the advances in propelling and auxiliary machinery in the search for greater economy, the greater compartmentation and fire-proofing of ships in the interest of safety and the changed trend in interior decoration due to the use of non-combustible materials. These are strictly American developments which compare most favorably with shipbuilding advances by other nations in the same period.

(Continued on page 68)



Launching of the United States Lines S.S. America was the highlight of 1939 shipbuilding. 723 feet long with a beam of 92 feet this vessel has a load draft displacement of 34,000 tons. Built by the Newport News Shipbuilding and Drydock Company at a cost of $16,000,000, the ship will carry 1,209 passengers and a crew of 639 when it is placed in service in the spring of 1940. This is the largest liner ever constructed in the United States.



Courtesy Chesapeake & Ohio Railway

RAILROAD RESERVE CAPACITY

BY

J. H. Parmelee

Director, Bureau of Railway Economics
Association of American Railroads

EVENTS across the Atlantic have led to an overwhelming appeal in this country to preserve our neutrality. Meanwhile matters of national defense and preparedness for any eventuality are uppermost in our minds as we take inventory of our resources.

Railroad performance in 1939 was of particular significance in that it offered during the Autumn months a practical demonstration of the capabilities of the industry during a period of exceptionally heavy demand. For some years the country has heard much about a "railroad problem," and critics of the industry, turning aside from the main points at issue, freely predicted that because of the reduced number of equipment units, obsolescence of facilities and alleged undermaintenance of properties, railroad service would break down during a period of heavy traffic movement. These predictions, based on inadequate analysis of the facts, led to a feeling of uncertainty regarding the adequacy of railroad facilities.

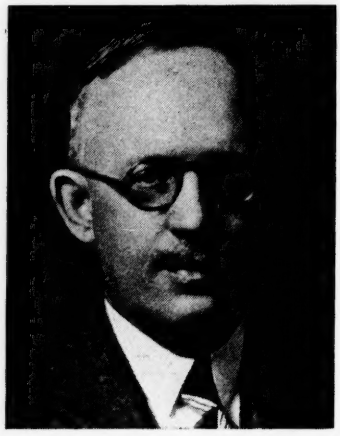
The test came in September, following declarations of war by three of Europe's major powers. For a period of eight consecutive weeks, from mid-September through the first week in November, the rail carriers loaded better than 800,000 cars of revenue freight each week, averaging 829,500 cars per week. This was an increase of 23 per cent compared with the preceding eight weeks, and an increase of 37 percent compared with the eight weeks of May and June. Loadings in each of the middle two weeks of October were greater than in any other week since 1930.

The railroads met the test successfully, handling the sharp increase in traffic volume without a car shortage of any consequence, and without threat at any time of inadequate facilities or a break-down in service. However, the industry has by no means been content to rest on its laurels since passing the period of peak seasonal movement in October. Programs designed to increase the reserve capacity of the rail plant are being vigorously pursued, including the purchase of new cars and locomotives and expanding maintenance programs. The railroads are preparing for any eventuality and therefore a discussion of railroad reserve capacity at this time seems particularly appropriate.

The Railroad Plant

The changing transportation picture in this country since the war of 1914-1918 has shown the following general developments: A tremendous growth in the use of motor vehicles, both private and commercial, aided by heavy governmental expenditures for the construction and maintenance of streets and highways; a considerable growth in the movement of freight by inland waterways, made possible because of large annual expenditures by the Federal government for improvement and maintenance of inland rivers and canals; expansion of oil and gas pipelines; contraction in railroad facilities, brought about in part by economic conditions and in part by unequal competitive conditions which have permitted motor vehicle, water and other carriers to cut deeply into railroad traffic.

The contraction in railroad facilities has taken the form of abandonment of some 20,000 miles of branch line since 1920. In evaluating the present capacity of the rail plant, this figure is sometimes over-emphasized, as is also frequently the



case in measuring or appraising current maintenance expenditures.

The abandonment of 20,000 miles of branch lines has only slightly affected the capacity of main lines. Possibly there are some instances where abondoned lines could have been used, if retained, to relieve congestion on main lines during periods of heavy traffic movement. However, the essential fact is that the main stems of our railroad system remain intact.

As to equipment units, the reduction of some 30 per cent in number since the peak of 1924 or 1925 must be evaluated in the light of increased capacity per unit and increased performance per unit. Leaving aside for the moment the performance factor, the trend in equipment ownership and capacity since the peak in 1924 or 1925, as the case may be, is shown in the following table.

Table I
Number and Capacity of Equipment Units in Service
Class I Railways in the United States

		As of December 31st		
		1924 or 1925	1929	1938
Locomotives in service	†	**65,358**	**56,571**	**43,810**
Aggregate tractive power (000,000 lbs.)	†	**2,593.2**	**2,550.8**	**2,123.5**
Average tractive power per locomotive (lbs.)	†	**39,891**	**44,801**	**49,803**
Freight-carrying cars in service	‡	**2,387,551**	**2,277,505**	**1,699,689**
Aggregate capacity (000 tons)	‡	**105,570**	**105,411**	**84,032**
Average capacity per car (tons)	‡	**44.8**	**46.3**	**49.4**
Passenger-train cars in service	†	**55,040**	**52,259**	**39,309**

†As of December 31, 1924.
‡As of December 31, 1925.

In the case of locomotives, the number in service at the end of 1938 was 33 per cent less than at the end of 1924 and 24 per cent less than at the end of 1929. Because of an increase in *average* tractive power per locomotive of 25 per cent over 1924 and 11 per cent over 1929, *aggregate* tractive power of locomotives in service in 1938 was only 18 per cent less than in 1924 and only 17 per cent less than in 1929. Keep in mind the fact that revenue ton-miles in 1937, the peak year of the depression period, were nearly 20 per cent less than in 1929, and passenger-miles were about 21 per cent less. In other words, a decline in traffic was in part the cause of the decrease in equipment.

With respect to freight cars, the number at the end of 1938 was 29 per cent less than at the end of 1925, and was 25 per cent less than in 1929. Increased capacity per car in 1938, 10 per cent over 1925 and 7 per cent over 1929, served to bring the reductions in aggregate freight car capacity to only a little more than 20 per cent under 1925 and 1929.

As to passenger-train cars, the number in 1938 was 29 per cent less than in 1924 and 25 per cent less than in 1929.

Keeping in mind, then, that the reduction in number of equipment units since the period of peak ownership has been about 30 per cent, which shrinks to about 20 per cent when considered in the light of aggregate physical capacity, what has been the effect of improved performance per unit on plant capacity? This is a highly significant factor and is oftentimes given less than proper weight by those who endeavor to analyze the railroad situation.

Railroad Performance in 1939

From a traffic standpoint the heavy freight movement during September, October and November featured the year 1939. **In the four weeks of October, a total of 3,375,000 cars of revenue freight were loaded, a figure greater than in any consecutive four weeks since 1930. Because of greater average loading per car and increased average haul per ton, when measured by ton-miles the freight movement in October, 1939, was greater than in any month since October, 1929.** By comparing certain performance factors in October 1929 and of 1939 considerable light will be thrown on present railroad capacity.

Table II
Freight Operations in October, 1929 and 1939
Class I Railways in the United States

	October 1929	October 1939	Per cent change	
Revenue cars loaded (4 weeks)	**4,679,411**	**3,374,943**	**Decline**	**27.9**
Revenue ton-miles (000)	**44,028,662**	**36,660,000**	**Decline**	**16.7**
"Active" frt. cars on line*	**1,974,458**	**1,367,486**	**Decline**	**30.7**
Cars loaded per "active" car	**2.37**	**2.47**	**Increase**	**4.2**
Revenue ton-miles per "active" car	**22,299**	**26,808**	**Increase**	**20.2**
Freight train speed (m.p.h.)	**13.0**	**16.1**	**Increase**	**23.8**
Net tons per train	**843**	**919**	**Increase**	**9.0**
Net ton-miles per freight train hour	**10,938**	**14,607**	**Increase**	**33.5**

*Total cars, not including privately owned, less cars awaiting or undergoing repairs and less serviceable surplus cars.

These figures are highly significant. Note that each "active" car performed on the average 20 per cent more revenue ton-miles in October, 1939 than in October, 1929; that average freight train speed was nearly 24 per cent greater; that net tons per train were 9 per cent greater; that net ton-miles per freight train-hour were 33⅓ per cent greater. With greater traffic volume, these performance averages would probably have been even better, but the significant fact is that the railroads in October, 1939 handled a freight traffic volume 17 per cent under October, 1929, measured by ton-miles, with 31 per cent fewer "active" freight cars. The situation with respect to freight locomotives is quite similar.

During October, 1929, the railroads had 23,301 "active" freight locomotives on line. They averaged 4,740,000 gross ton-miles of service per locomotive during the month. In October, 1939, the number of "active" freight locomotives was 19,020, and they averaged 4,941,000 gross ton-miles of service, or an increase of 3.3 per cent over the average for October, 1929. As to reserves, there were 884 stored serviceable freight locomotives in October, 1939, and 5,525 unserviceable units undergoing or awaiting repair. By speeding up maintenance, the number of unserviceable locomotives could be reduced to about 3,000, thereby releasing about 2,500 additional locomotives for service.

The next question is how close the railroads came to using up their reserve car capacity in October, 1939. From the standpoint of freight cars, there were 198,890 cars awaiting repair on October 1, and 167,805 on November 1, or let us say an average of 183,348 cars during the month. This represented 11.3 per cent of total railroad-owned cars on line. Experience of the past indicates that when necessary the ratio of unserviceable cars can be and is reduced to a minimum of 6 per cent. If, then, the rail carriers had been put to the extreme test they could have provided 86,300 additional cars by speeding up equipment maintenance. In addition, there was an average daily surplus of 66,000 railroad-owned cars during the month, which gives a total reserve of 152,300 cars, which at the rate of 2.47 loads per car for a four-week period (Table II) would have enabled the carriers to load 94,000 more cars per week, or for the month of October to have moved about 11 per cent more revenue ton-miles than they were called upon to move.

Maintenance Expenses

Space limitations permit only barest mention of the question of maintenance expenses, even though it has an important bearing on the matter here under discussion. Much misconception of the maintenance question exists, primarily because analysts are prone to compare current expenditures with those of the

(*Continued on page 64*)

COAL SITUATION AND OUTLOOK

BY

Jesse V. Sullivan

Secretary, West Virginia Coal Association

BITUMINOUS coal, greatest of the mineral fuel industries and primary source of national energy, suffering from economic ills accentuated by unwholesome governmental panaceas, gave indications of recovery in the closing months of 1939.

Sparked by another armed conflict in Europe which animated business and industry to renewed activity, the weekly production of coal mounted from 6,000,000 tons to more than 10,000,000 tons weekly during October and early November.

Before December the war boom was spent, acceleration of output subsided and the weekly output of this essential natural resource recoiled to comparable production in recent years. Expected heavy increases in export trade with neutral countries, while belligerent coal-producing nations were locked in the embrace of war, were disappointing in volume.

The war spurt, however, successfully demonstrated the ability of the coal industry to increase its capacity to meet greater domestic demands. As American involvement in the European cataclysm became more remote, the domestic demand subsided. During the few weeks the demand continued there was clearly revealed the potential capacity of existing mines to produce an adequate supply. Furthermore, ample evidence was given to "snowbirds" attracted to the industry with expectations of war profits, that they made their entry at their own peril.

Those engaged in the coal industry vividly recall the prosperous reign of King Coal during the World War and the high prices of the commodity in post-war years. Expansion of the industry in the war years, encouraged by the government to prosecute hostilities to a successful conclusion, brought temporary profits. It also swept the industry in later years to the brink of economic prostration. The records of the federal treasury show the industry has operated with deficits for the past 15 years. The National Resources Board says the depression in coal began in 1923.

The year 1923 was the peak year of the coal industry in the number of mines operated and men employed. Production, however, reached the highest point in 1918. In 1923 there were 9,331 mines in operation and in 1938 only 6,500. In the same period the national tonnage fell from 564,000,000 to 344,000,000 tons, and mine employment dropped from 704,000 to 435,000.

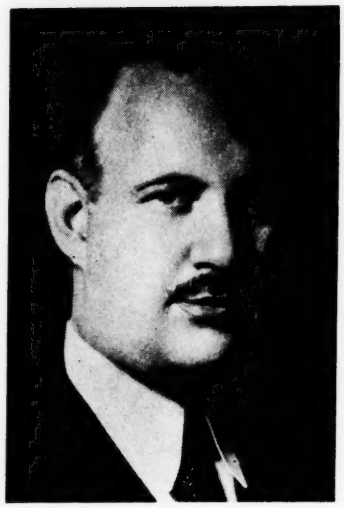
These comparative figures reflect clearly the decline of the coal industry. They are also prognostic. In four weeks of last October the aggregate output of coal in the United States was 41,400,000 tons. The annual production at that rate would have reached 532,000,000 tons. These figures reveal that with 30% of the mines suspended, and nearly 300,000 fewer employees, the potential production of the industry could approximately attain the tonnage mark of the peak year.

There are some who will contend that the increased production during last October could not be sustained during an entire year. Their contention is refuted by factual evidence. While the war spurt was in progress, railroads found some difficulty in moving the increased production. Many of their cars were employed in moving grain from the West. It required days to open abandoned areas and more time to train new employees. The fact that there was a steady accretion of tonnage during these weeks indicated that the trend would have continued upward except for the decreased demand.

This unusual and precipitate increase in the production of a commodity by an industry that many had thought decadent or moribund, was agreeably surprising to consumers. They have never learned to buy coal except when they have immediate use for the commodity. They demand it instantly when the coal bin is bare.

Old King Coal, however, has not been asleep during his days of adversity. Neither economic grievances nor govern-

(Continued on page 72)



SOUTH'S OIL IN 1939 WORTH $800,000,000 AT THE WELL

BY

Victor H. Scales

Director of Public Relations
American Petroleum Institute

DISCOVERY of oil in commercial quantities on September 5, 1939 in Mississippi may prove to have been the most important single event of the year in the petroleum South.

Extent of petroleum reserves in Mississippi is unknown, but the bringing-in of Union Producing Company's No. 1 Woodruff in Yazoo County is viewed by some oil men as confirmation of their long-held belief that Mississippi potentially is a great oil state. Already the discovery has produced upturns in local business, and favorably has affected the welfare of thousands of farmers whose land has been leased. Several hundred drilling permits have been issued and some 50 geophysical crews, the industry's modern scientific explorers, have been at work. Exploration has extended even to Alabama.

Hopes of Mississippi's farmers that this new sub-soil crop will do well by them are not unfounded. Already petroleum is, by far, the South's No. 1 crop. This crop, worth in 1939 about $800,000,000 at the well, was no small contribution to the South's improving economy.

Farmer's of the South's most northern state, Missouri, are hopeful also. Discovery of oil late in 1939 in Nebraska redoubled exploring and drilling activity in the nearby Forest City basin of Missouri. Nebraska's is a comparatively new development. Missouri long has been regarded as having substantial reserves of petroleum, but decades of effort have failed to produce more than a few thousand barrels of oil a year.

The Mississippi discovery brings to nine the number of southern oil-producing states. Production currently is large only in Texas, Oklahoma, Louisiana, and Arkansas, yet because of these four states the South has become the greatest oil-producing section in the world. The United States continues to be the world's greatest oil-producing country, and in 1939 some 61 per cent of this country's production came from southern wells.

The discoveries in Mississippi and Nebraska constitute new embarrassment for the prophets of disaster who have been heralding scarcity ever since Colonel Drake's well was brought in back in 1859. These developments again will necessitate an upward revision of the annual estimate of the nation's oil reserves, which have been growing year by year.

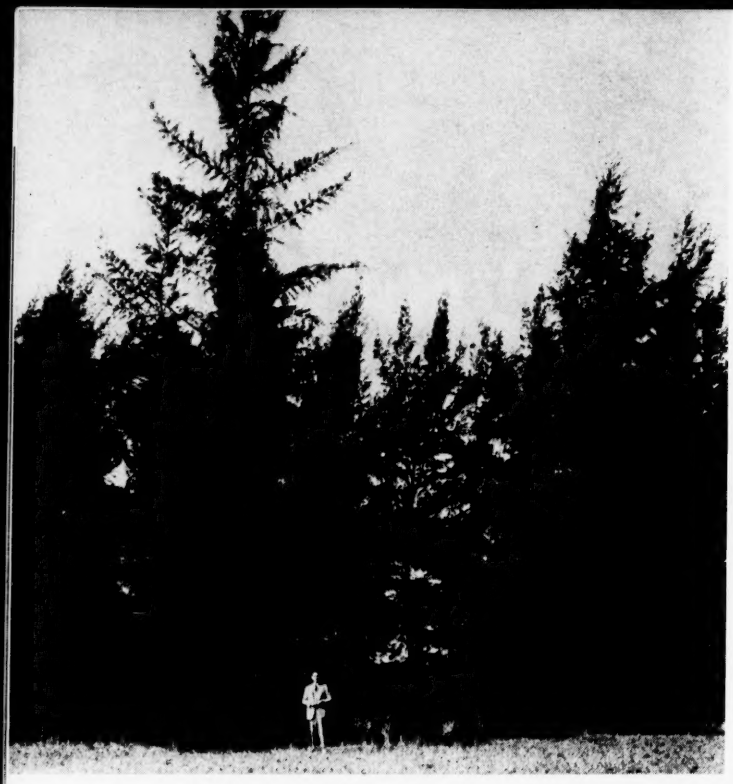
At the beginning of 1939 the South had 179,300 of the 369,640 producing oil wells in the United States. Typical of the patchwork economics that, by the very nature of crude oil in the ground, must characterize much of the industry's operations, the producing ability of these wells varies from the 0.6 barrels per well per day of West Virginia's 17,700 wells to the 145.5-barrel daily average of the 1,400 wells on Louisiana's Gulf Coast.

Together in 1939 these southern wells produced an estimated 767,178,000 barrels of crude oil. This was 61 per cent of the total U. S. 1939 production of 1,260,099,000 barrels. Sixty-three per cent of the South's production, 483,500,000 barrels, came from Texas. Oklahoma produced one-third as much, 161,041,000 barrels. Louisiana contributed 93,000,000 barrels and Arkansas 20,540,000 barrels. These four states alone accounted for 98.8 per cent of the South's total.

The 1939 yield of Kentucky's wells is estimated at 5,510,000 barrels, of West Virginia's, 3,587,000 barrels. Although no data are yet available, production in Mississippi, Missouri, and Tennessee combined probably totalled about 100,000 barrels.

The slight decline in the South's production from the 1938 total of 773,737,000 barrels, contrasted with the production increase in the rest of the country, reflects no drop in the productive capacity of southern wells. Rather it is an index of the more effective operation of production control by proration, particularly in Texas and Oklahoma, the two southern states which are members of the seven-state Interstate Oil Compact. As a conservation measure these states have agreed to hold oil production well below the maximum potential in order to extend the life and increase the potential yield of the fields, and to eliminate

(Continued on page 66)



PULP MAN'S PARADISE

BY

Donald D. Bode', Ph.D

Professor of Chemistry,
University of Tampa

PERSONS with imagination have predicted that scientists would develop fast-growing plants for use of the large population which some day may crowd the earth. These plants would supply pulp for the increased use of paper, fuel for power and residence heating as coal and oil disappear, cellulose for synthetic threads and plastics.

Rapidly growing timber, concentrated in a comparatively small area would mean a pulp man's paradise—wood for a dollar a cord delivered at the mill—and it appears that nature already has done the work proposed for the botanists.

There is a tree that grows 35 feet tall in six years, with a nine-inch trunk; 45 feet tall in 12 years with a trunk 17 inches in diameter. It is the so-called Australian pine, several species of which are native to the sandy foreshores of the Queensland coast of Australia and also found native to Java and other tropical islands of the Pacific.

These trees are not true pines. They belong to the family Casurina, but look like pines because of their bushy growth. They have articulated needles. The wood resembles hickory. It is fairly soft while green, but when dry is hard as concrete. South Sea Islanders use it for war clubs. It is one of the iron woods of the tropics and sometimes is called "beefwood" or "beach she oak."

The rapidity of growth of Australian pine may be understood better by comparing it with southern jackpine. The latter grows at the rate of approximately one cord per acre per year. Australian pine produces four to six cords per acre per year, according to reports of the Puerto Rican Forest Service. The wood is approximately 25 per cent heavier than jackpine, which means that the real yield is greater by that much more.

While Casurina is not native to the United States, it will grow wherever the mean temperature of the coldest month is not below 54 degrees Fahrenheit—Florida, southern Texas and southern California. Thousands of trees already have been planted in Florida as wind breaks, and these are reseeding themselves into some fairly large patches.

In India, where this fast growing tree has been farmed since 1896, the trunks are used for mine poles. On plantations it has reached a height of 90 feet with 24-inch trunks in nine years. In its native Australia the tree grows to a height of 150 feet with a trunk more than 16 feet in diameter.

On keys off the southwest coast of Florida, Australian pines have propagated themselves from seeds blown over from the mainland and have attained considerable height and density. They seem to prefer sandy islands to almost any other type of land, thriving in places where only cactus and sea grass grow native.

As a result of dredging operations in Tampa Bay, a new island was thrown up four years ago. Some 20 to 25-foot Australian pines already have grown there from seeds washed ashore. Casurina will grow in sandy soil to the very edge of salt water, awash at high tide.

Experiments conducted at the University of Tampa indicate that these trees may be a highly economical source of pulpwood.

Using not too satisfactory laboratory apparatus which we were obliged to design and construct ourselves, we have produced 40 per cent and better pulp on a dry basis, containing 90 per cent and higher alpha cellulose. Since 87 per cent alpha cellulose is the minimum required for the viscose rayon process, the experiments indicate a new source of rayon.

Other products made from alpha cellulose include cellophane, gun cotton, enamel and lacquers, artificial leather, synthetic ivory and amber, collodion, blasting gelatin and various plastics.

(Continued on page 62)

Above—Australian pine seedlings, near the waters of Tampa Bay, Florida, the oldest of which is 11 years old. The tallest one rises 56 feet. Right—An Australian pine tree planted on Davis Island, part of the city of Tampa, 13 years ago now has a trunk measuring 20 inches at breast height.

SOUTH'S LUMBER INDUSTRY PREPARED FOR WAR DEVELOPMENTS

BY

H. C. Berckes

Secretary-Manager, Southern Pine Association

WHATEVER may develop from the war in Europe with respect to the effect upon the industries of the United States, the Southern lumber industry will be found prepared to fulfill whatever demands may be made upon it, and to meet any emergency that may arise. This statement, we confidently believe, will be proved correct both if the hostilities are confined entirely to the nations overseas and continue for a long period, and also if for any reason Uncle Sam should become involved as a participant in the conflict.

Leaders in the Southern lumber industry anticipate that if the hostilities are confined to foreign nations and continue for a long period—two years or more—there is grave likelihood that other foreign countries, in addition to those at present involved, may be drawn into the conflict, and that there will develop a greatly increased demand for American lumber, not only from the countries participating in the war, but also from neutral states on both sides of the Atlantic ocean, whose former supplies of forest products will have been greatly curtailed, or probably entirely cut off, by the war. Of course, if the United States should become involved as a participant in the hostilities, extraordinary demands will be made upon the Southern lumber industry — as well as upon all other American industries—by our Government to fill its requirements.

The Southern pine industry today is much better equipped to meet any demands made upon it due to either a foreign war, or one in which Uncle Sam participates, than it was during the World War that ceased in 1918. It is better prepared now than ever before by experience, facilities, improvements in manufacturing and handling methods, and in cooperative efforts, all of which add up to an important factor for meeting extraordinary demands and critical emergencies.

The Southern pine industry at present is more efficiently organized than ever before, the result of past experiences and the necessity for concentrated industry action during recent years. The nature and plan of operation of the Southern Pine Association, and its relationship to the entire Southern pine industry, and also to the South's lumber industry as a whole, make it possible to procure practically immediate industry action and cooperation whenever called upon and for whatever worthy purpose.

During the last World war, the Southern Pine Association embraced only a few states and in those and in additional Southern states, several other pine manufacturing organizations were operating. Now, however, the SPA embraces the entire Southern lumber producing territory, which makes for the better handling of lumber problems and needs. In addition, since the World war, the Southern lumber industry, as a whole, has had an exceptional experience in cooperative activity which can be considered as a "dress rehearsal" for just such intensive cooperation as would be demanded under war conditions—this experience being the duties and functions imposed upon the industry during the NRA period.

The experience gained by the Southern lumber industry in meeting emergencies and serving the nation during the last World war was most helpful and has not been forgotten by the members of the industry. In the last World war the Southern Pine Emergency Bureau was organized and in efficient operation almost immediately after the industry was called upon by the Government to furnish lumber needed for cantonments for troops, for ship building, and for numerous other purposes. Government orders for lumber were swiftly allocated to mills which were in the best position to quickly furnish the specific kinds of lumber required. The proximity of the mills to the location where the material was needed

(Continued on page 64)

Lumber activity on the wharf at Baltimore, Md., is being duplicated at many southern ports on the Atlantic and Gulf coasts.

COTTON TEXTILE OUTLOOK

THE principal effects of the European war upon the cotton industry are three-fold, namely, (1) an increase in the world demand for American cotton—a development of recent weeks, (2) an increase in the demand for industrial fabrics such as duck, and cloth used for bagging purposes, and (3) the simultaneous efforts of customers of the cotton mills last September to build up their inventories and buy ahead in anticipation of possible war demand.

Exports of raw cotton have increased to such an extent that the export subsidy of a cent and a half a pound, provided by legislation in the last congress, has been reduced to one-fifth cent a pound. Coincident with this development, the price of cotton has risen 2½¢ a pound above last September.

The shortage of burlap bags and other forms of jute wrappings, occasioned by the war, has at least temporarily increased the consumption of cotton fabrics suitable for bags and wrapping purposes. The customary price differentials which favored jute have become very narrow or have disappeared altogether. Normally burlap has a price advantage of 2 to 3¢ a yard over cotton fabrics of comparable construction adaptable for bagging purposes.

With respect to all classes of cotton goods, the concentrated buying last September stimulated by low prices prevailing at that time, the need for replenishing inventories and the urge to prepare for possible quickening of demand due to the war, resulted in one of the heaviest buying periods the industry has ever experienced. At the present time cotton mills are running at more than full double shift capacity in order to meet the requirements for delivery of orders placed in September and October.

A basic change of fundamental importance to coton mills is the continuous dwindling of cotton spindles. During 1939 a million spindles disappeared. This is about the average rate of recent years. The number now in place is 25 million. Two years ago there were 27½ million; in January, 1935, nearly 31 million. About 9 percent of the industry's spindles are idle notwithstanding the shrinkage but these are regarded in the main as unsuited to present-day competition. Progressively longer running time for the remaining spindles becomes necessary especially in periods of heavy demand. For example, operating spindles averaged 87 hours a week in October and very likely still more in November. Five years ago cotton spindles averaged 64 hours a week. Since the legal limit for labor shift in the cotton industry is now 42 hours, and most mills run only 40 hour shifts, some third shift running is inescapable. It could be argued that such is not the case if cotton mills could run on an even schedule throughout the year but delayed buying and requirements of prompt delivery when orders are placed make it necessary for many mills to run part of their equipment a third shift when the cycle of heavy demand for cotton goods recurs. Management of the third shift, therefore, presents an acute problem for the industry. The solution that most mills try to find is the use of it when the volume of business makes it necessary and abandonment of it when the volume recedes.

Indications of three shift running come out more sharply when the spindle reports from the Cotton Growing states are examined separately from those pertaining to New England. In October, the average active spindle in the South operated 91 hours a week. Our estimate for November is 94 hours. The highest previously was early in 1937 when active spindles ran 91 hours. In 1935 the average was 67 hours per week in Cotton Growing states. It is important to emphasize that even the recent high rate of operation did not meet the demands of customers. Billings during October and November more than equalled production and mill inventory was much cut down.

It should also be said that the disappearance of spindles has not been at the same rate in all sections. In the South, since January, 1935, the loss has been a million one hundred thousand spindles. The loss outside of the South is nearly 5 million. Furthermore, only 6½ percent of southern spindles are idle; outside of the South 17 percent are idle. For the reason that even at times of greatest strain upon the industry for production there have been about 2½ million idle spindles, it can be assumed, as stated previously, these idle spindles are, in the main, obsolete. We would estimate the effective spindles in the industry at about 22½ million. To date the mills with these effective spindles have shown an ability to average close to 90 hours a week for the industry as a whole when the pressure for deliveries warrants it. What additional facilities there are for three shift running in the form of adequate housing or availability of labor awaits future tests.

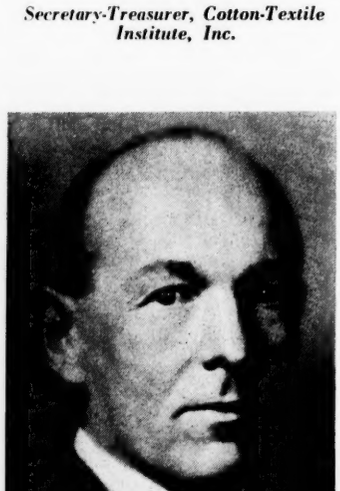
Coincident with longer hours of opera-

(Continued on page 60)

BY

Paul B. Halstead

Secretary-Treasurer, Cotton-Textile Institute, Inc.



FERTILIZERS

1940

BY

Charles J. Brand

Executive Secretary and Treasurer, The National Fertilizer Association

CONCERN has been voiced by some people as to our ability to feed our crops in 1940 because of plant food scarcity brought about by the wars in Europe. There need be no worry on this point so far as our next growing season is concerned.

We find our country in an entirely different situation as to raw materials for fertilizer manufacture than that which existed during the World War period 1914-1918. That war came without warning. There was no period for preparation; no time for accumulation of stocks. At that time we were almost wholly dependent on Chile for our nitrates and on Germany for our potash.

Nitrates from Chile were the only source of nitric acid for munitions manufacture. The process also required the use of sulphuric acid to produce nitric acid and our superphosphate industry was called upon to surrender a part of its sulphuric acid for the cause.

During the progress of the World War the process for the fixation of atmospheric nitrogen was developed in Germany and since that time has been perfected in many countries including our own. Each acre of the earth's surface has in the atmosphere above it 34,500 tons of nitrogen as a source of supply. The supply is constantly being renewed by the gases resulting from the decomposition and combustion of nitrogen compounds. Two large and several small plants are in operation in this country for the fixation of atmospheric nitrogen into ammonia, and their output can be materially and quickly increased if necessity arises. A part of this ammonia is converted into nitric acid by oxidation in the presence of suitable catalytic agents. The nitric acid so produced is being used for the manufacture of explosives for munitions and of nitrate of soda for fertilizer use. While we are no longer entirely dependent on Chile for nitrate of soda, importation of this material has continued, some 600,000 tons being received during the year ended July 1, 1939. Considerable stocks are now on hand and importation is continuing at a normal rate.

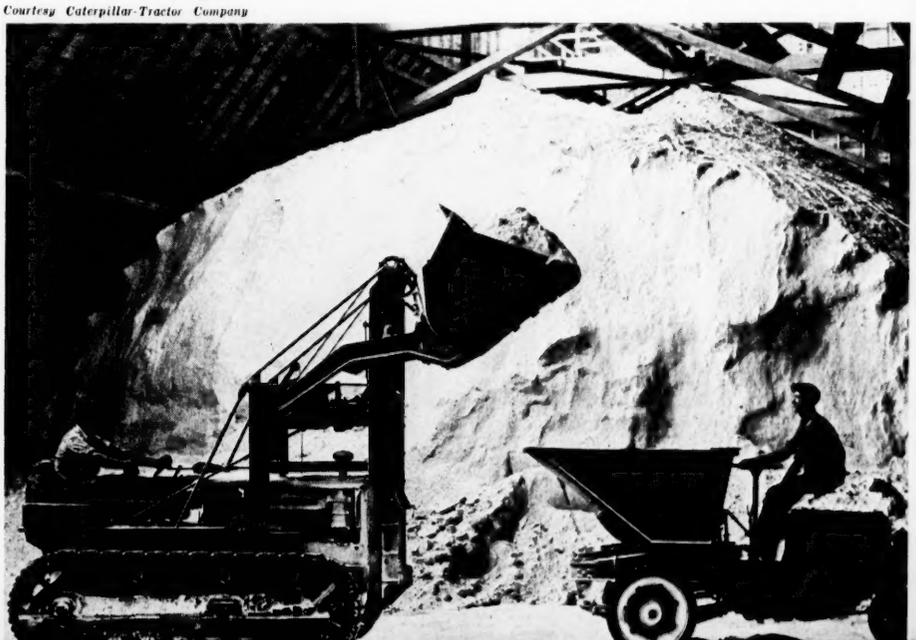
The largest tonnage of nitrogen for fertilizer use is from by-product sulphate of ammonia produced in the manufacture of coke. The mounting demand for steel has necessitated the use of more coke with consequent increased production of sulphate of ammonia. The natural organic sources of nitrogen such as cottonseed meal and other vegetable meals, packing-house tankage, and similar materials will undoubtedly be available in larger quantities because the demand for human foods of which they are by-products will be greater. Even in extreme war emergency it appears that our nitrogen needs for food production and defense will be adequately met.

Previous to the outbreak of the World War, as mentioned above, we were almost entirely dependent on Germany for our potash supplies. During that War the English blockade stopped all potash shipments. The resources of this country were most carefully investigated by private and public agencies in an effort to develop domestic potash production. Many enterprises were started and did their part during the war to relieve the potash shortage. All but one of these operations found themselves unable to meet the competitive prices when shipments from Europe were resumed after the Armistice. One company commenced operations in 1916, recovering potash from the saline brines of Searles Lake, California and has been in operation continuously since that time. Potash deposits were discovered in the Permian Basin of New Mexico and Texas in 1921. Two companies have been in large scale production near Carlsbad, New Mexico, for several years and another company will enter production early next year. American production was equal to approximately two-thirds of the country's

(*Continued on page* 60)

Trans-shipping nitrates from storage in Virginia

Courtesy Caterpillar-Tractor Company



SOUTH'S CONSTRUCTION NEARS RECORD HIGH

BY

S. A. Lauver

SOUTHERN construction mounted to another peak in 1939, when according to reports published in the Construction daily bulletin, contract values for the sixteen States south of the Mason and Dixon line surged upward to $925,981,000 to put the year's total within 1.5 per cent of equaling the all-time record established three years before.

Industrial construction rose, privately financed building fell, and Federal funds were poured into a variety of activities which collectively assumed the paramount part in bolstering the 1939 figure to a level surpassing the previous second-place record held by 1930, the year when gas pipeline projects forced Southern construction above the nine hundred million dollar mark for the first time.

December's contribution to the 1939 total was $66,791,000, or slightly more than that of November and about 42 per cent under the December, 1939 figure, which marked the highest point in that year's activity. The high point in 1939, however, occurred in May, during which contracts totaled $112,902,000. The low point of the year was June's $59,004,000.

Practically 18 per cent of the entire total for 1939 contracts in the South went for highway and bridge work, the $164,416,000 figure for this type of construction representing improvements in all of the sixteen States, with Texas, Mississippi, Virginia, Alabama and Kentucky heading the list in the order named. It is expected that the 1940 programs will equal or better those of last year, as favorable statements have been issued by a number of the State highway departments, as shown elsewhere in this issue.

Valuation of projects contracted for by private enterprise during 1939, as listed in the Construction daily bulletin was placed at $323,739,000, or 34 per cent of the year's total. Despite this lack of a majority participation, private interests were responsible for projects valued above the total for private work in the preceding year. Although private building projects were below the level set in 1938, industrial construction showed a gain.

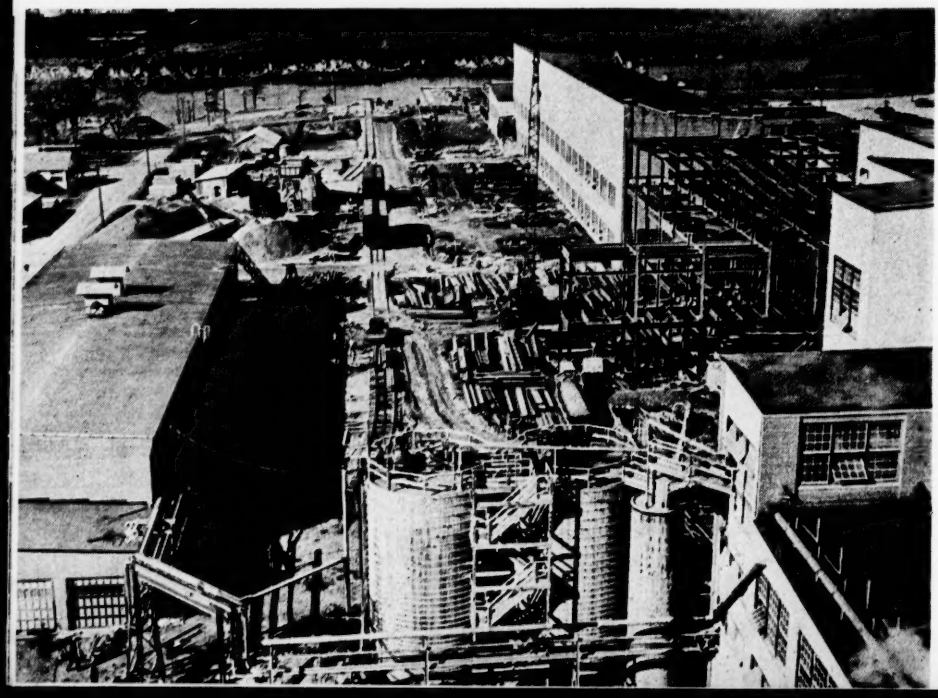
The advance in industrial construction, however, became most pronounced after formal hostilities broke out between the major European powers now at war. Of the $162,874,000 in announced industrial contracts in the South, $71,053,000 were published in the first eight months of the year. The $91,821,000 balance occurred in the period following September 3, when Great Britain and France were at war with Germany over the invasion of Poland. September's $18,367,000 of Southern industrial contracts were followed by the peak $43,296,000 in October, the $22,053,000 of November beginning a decline which continued in December as industrial work dwindled to $8,105,000, a figure more in keeping with the monthly average before September.

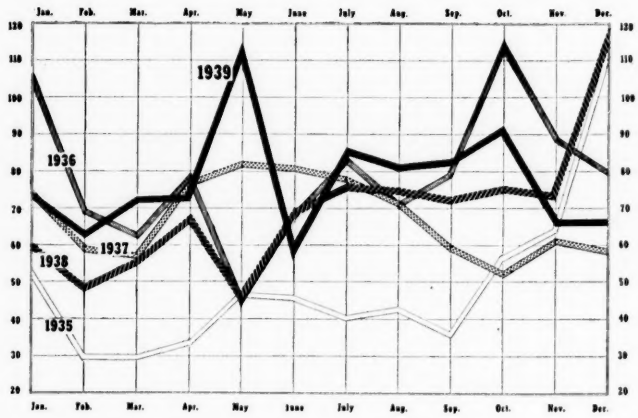
Industry in the South is so closely inter-woven into the country's economic and social life, that general business improvement soon reflects in increased operations here. Steel manufacturing, for instance, is at its highest level in many year. There are three important steel centers in the South—Baltimore, Birmingham and Weirton. Bethlehem Steel at the first, Tennessee Coal Iron and Railroad Company and Republic Steel at the second-mentioned and Weirton Steel, a National Steel Affiliate at the West Virginia point, are all participating in this activity and each are now engaged, or have within the year, completed extensions or improvements.

Shipbuilding during the last several years has experienced a revival due to the Maritime Commission's 50-ship a year for 10 years program. Newport News and Baltimore, great shipbuilding areas are keyed to beehive activity. Tampa, Pascagoula and Beaumont are also recipients of huge ship contracts, which in the first two cities has resulted in important extensions of facilities.

Paper manufacturing is now one of the South's most important industries. Although long existant, this industry became prominently important a few years ago when more than a hundred million

Houston's big industrial expansion, Champion Paper and Fibre Company's $3,000,000 plant addition to producing high graded coated papers for Time and Life magazines, is shown under construction in the picture below. Overall length of the Fourdrinier paper machine will be approximately 400 feet. The building will harmonize with the existing sulphate pulp plant built back in 1937. Engineering for the 140 by 828-foot brick and steel structure was done by H. K. Ferguson Co., of Cleveland; Merritt-Chapman & Scott Corp., New York, are contractors for the building and all necessary installations. Beloit Iron Works, Beloit, Wis., are furnishing the paper machine, which involves expenditure of approximately $1,000,000 and will be the world's largest combination paper making and coating unit.





Dollar value of the South's Construction

dollars was poured into new plant construction. Not long after this is published the South's first newsprint mill will start operations, construction will be well along on the first white paper mill deep in Southern territory, and construction is scheduled to start on an additional plant in Florida. Other of the recently established plants are building additions or making preparations for expansions.

Freight rate parity granted by the Interstate Commerce Commission will place some Southern products in a better position to compete with those of other sections, with expected action on textiles opening up the possibility of an increase in cotton spindle capacity to further raise the South's dominance in processing.

Improved industrial operations, such as steel, shipbuilding, mining and lumbering, naturally result in expanding production of foodstuffs, beverages, building materials and the chemicals that play such an outstanding part in furthering the possibilities of utilizing the South's abundance of agricultural, mineral and forest products and by-products. All of these have shared in 1939's accomplishments; are expected to again share in the potentialities of 1940.

Power companies, realizing that existing generating capacities would limit the actual predicted industrial expansion and at the same time apparently yielding to government pressure to make ready for national defense power demands, have embarked on new plant construction, which for almost a decade has been practically dormant. Private projects involving many millions of dollars are progressing in practically all the Southern states along the Atlantic and Gulf coasts. Government sponsored hydro plants will augment these steam plants and cooperative-built lines are extending power distribution into rural areas, where improved farm income would result in increased power consumption.

Great dams, other than the Tennessee Valley projects, are under way at various points, such as Sardis, in Mississippi, Pensacola, in Oklahoma, as well as the Great Salt Plains and Fort Supply projects, Wappapello, in Missouri, Marshall Ford, Denison and others in Texas, with the possibility of others on the Savage River in Maryland and in West Virginia. Involving an expenditure of many mil-

Statistics of South's Construction

	Contracts Awarded December 1939	Contracts to be Awarded December 1939	Contracts Awarded Twelve Months 1939
PRIVATE CONSTRUCTION			
BUILDING			
Assembly (Churches, theatres, auditoriums, fraternal)	$1,394,000	$2,657,000	$16,439,000
Commercial (Stores, restaurants, filling stations, garages, etc.)	3,021,000	2,259,000	32,133,000
Residential (Apartments, hotels, dwellings)	5,706,000	4,465,000	92,930,000
Office	2,859,000	3,535,000	19,363,000
	$12,980,000	$12,916,000	$160,865,000
INDUSTRIAL	$8,105,000	$23,985,000	$162,874,000
PUBLIC CONSTRUCTION			
BUILDING			
City, County, State, Federal	$9,443,000	$10,315,000	$120,163,000
Housing	12,442,000	9,623,000	77,986,000
Schools	1,534,000	5,911,000	61,423,000
	$23,419,000	$25,849,000	$259,572,000
ENGINEERING			
Dams, Drainage, Earthwork, Airports	$5,658,000	$1,289,000	$65,090,000
Federal, County, Municipal Electric	2,395,000	3,100,000	85,773,000
Sewers and Waterworks	1,084,000	28,016,000	27,391,000
	$9,137,000	$35,405,000	$178,254,000
ROADS, STREETS AND BRIDGES	$13,150,000	$19,802,000	$164,416,000
TOTAL	$66,791,000	$117,957,000	$925,981,000

lions, these projects, together with many sewer and water projects and various flood control, harbor improvements and conservation undertakings, practically complete the heavy construction picture.

Housing occupies an important position in the private building field. The forecast is that Americans will build and buy more homes during this year. Coupled with the fact that local housing authorities are going forward with numerous projects, which during 1940 will materialize into expenditures of great sums of money, residential building seems to have good prospects. Commercial building should in 1940 compare favorably with that last year, with such establishments further recognizing the fact that larger and modern selling spaces show definite results in more sales.

Industrially, the start of the year of 1939 was dominated by railroad activity with power plant construction proceeding or planned at a number of points and new plants or additions either proposed or contracted for in various other fields such as steel, textile, aircraft, petroleum, chemical and paper.

Railroads among those making the awards for rail and other supplies in connection with decided increased construction and improvement programs were the Southern, St. Louis & San Francisco, Seaboard Air Line, Southern Pacific, Norfolk and Western and the Louisville and Nashville.

Duke Power Co. started work on its $7,500,000 Cliffside power plant in North Carolina, Virginia Electric & Power Co., Richmond, proceeded with its Twelfth St. power station as the Consolidated Gas, Electric Light & Power Co., Baltimore, carried forward work on its $3,600,000 Westport steam plant addition and made plans for further expanding that station by an expenditure of $4,500,000.

Mid-Continent Petroleum Corp., Tulsa, let contract for a crude oil pipeline and the Texas-New Mexico Pipe Line Co. started work on a Texas gather system. Louisiana-Nevada Transit Co. proposed a natural gas pipeline from Louisiana to Arkansas; Dixie Pipeline Co. started its Texas pipeline project and Atlantic Refining Co. proposed reconstruction of its Port Arthur polymerization unit. American Viscose Corp. made awards for equipment for its new Front Royal, Va. plant. Early developments in the year's textile expansion were the 250-loom addition to the Bibb Manufacturing plant a Porterdale, Ga., the $250,000 addition to Vanette Hosiery Mills, Dallas, additions to the Cedartown and Cartersville, Ga. plants of the Goodyear Tire and Rubber Co.

The most noteworthy award of February's construction activity was the group of contracts for Glenn L. Martin's $3,000,000 expansion at Middle River, near Baltimore. Contracts for the buildings for the $5,000,000 plant near Muscle Shoals, Ala., were awarded by the Electro-Metallurgical Co. Chesapeake Corp., a paper manufacturer, made known its plans for a $300,000 building program at West Point, Va.

Work has started on the sulphate and alumina plant at Georgetown, S. C., by the American Cyanamid & Chemical Corp. American Tobacco Co. let equipment contracts for its $200,000 power plant addition at Durham, N. C. Tubize Chatillon Corp., rayon producer at Rome, Ga., asked bids for an addition. Dallas was the scene of operations on the $250,000 furniture plant of the Kroehler Manufacturing Co. Ingalls Iron Works in March was pushing construction on its new ship ways at Pascagoula, Miss., and the Newport News Shipbuilding & Dry Dock Co., was expending $1,000,000 for improvements.

Industrial construction had begun to show a vast improvement by April, a month when the awards jumped to more than twice the total for any of the other months of 1939. Contracts were let for six buildings of the $10,000,000 Celanese Corp. of America plant at Pearisburg, Va. Wheeling Steel Corp., Follansbee, W. Va., placed the order for a benzol refining unit. Tennessee Coal, Iron and Railroad Co., Fairfield, Ala., installed equipment for producing cold-formed building sections, while Bethlehem-International Supply Co., a Bethlehem Steel affiliate, made the award for a new warehouse to cost $250,000. United States Tobacco Co., Richmond, advanced with construction on a big plant as the Continental Oil Co. let the contract for facilities to cost $500,000 in the Ville Platte oil field, Louisiana.

Although industrial contracts dropped slightly in May, there were several important projects in prospect or on which contracts were awarded such as the $5,000,000 Hollingsworth & Whitney plant at Mobile, Ala., the $1,500,000 mechanical rubber goods plant for B. F. Goodrich plant at Clarksville, Tenn., the Czecho-Slovakian Bata Shoe plant in rural Maryland, near Aberdeen, and the addition at the Nitro, W. Va., plant of the American Viscose Co. American Rolling Mill Co., of Middletown, Ohio, contracted for its coal tipple at Huntington, W. Va., in connection with a $360,000 program.

Construction was started at Elin, N. C., on a $500,000 plant for the Chatham Manufacturing Co. Contract was reported let in May for an $800,000 Mid-Continent refinery at Tulsa and the Haynes Hosiery Co., Winston-Salem, N. C., made the award for its big addition. M. J. Grove Lime Co., Lime Kiln, Md., planned a $250,000 quarry development, with a $100,000 milk plant proposed at Christiansburg, Va., by Southern Dairies. American Can Co. contracted for its $100,000 warehouse addition at Houston, Tex. Nolde Brothers, Norfolk, Va., made the award for their new $100,000 bakery and work moved ahead on a $100,000 peanut shell plant at Montezuma, Ga., for Kroger Grocery & Baking Co. Link-Belt announced the contract for its $100,000 plant at Dallas, Texas.

From July industrial construction improved through the next five months. United States Steel Corp. again came into the picture as it announced that construction had started on a large central ore conditioning and sintering plant at Wenonah, Ala., for its subsidiary, Tennessee Coal, Iron and Railroad Co. At the same time, Ecusta Paper Corp. was finishing the country's first cigarette paper plant, a $2,000,000 enterprise at Brevard, N. C.

Rustless Iron & Steel Co., Baltimore, Md., late in July made public its announcement of a $1,300,000 plant expansion on which construction was progressing, with Bethlehem Steel Co. breaking ground in the same month for three new units at its Sparrows Point, Baltimore plant to cost between three and four million dollars. New textile facilities included the $1,000,000 modernization program at the Appleton Co., Anderson, S. C.; a $225,000 extension at Muscogee Manufacturing Co., Columbus, Ga.; a $100,000 investment of the Liberty Hosiery Mills, Liberty, N. C., and projects at Gainesville, Ga., Thomaston, Ga., Burlington, N. C., South Pittsburgh, Tenn., and Pulaski, Va. Western Electric Company's project at Atlanta, Ga., was estimated at $400,000. Other prominent firms mentioned in July reports on industrial expansion were International Shoe Co., with a proposed plant at Fulton, Mo.; Pittsburgh Plate Glass Co., new warehouse and showroom at Corpus Christi, Texas; Eastman Kodak Co., Laboratory, Houston, Texas; Phillips Petroleum Co., a 20-mile pipeline in Texas.

August's industrial total continued the upward trend. The $4,000,000 first unit of a power plant at Mobile, Ala., for the Alabama Power Co. represented a continuation of the South's power plant expansion. Florida Power & Light Co., Miami, announced its $3,000,000 plant addition. Contracts were announced on the $3,000,000 addition to the Houston, Texas plant of the Champion Paper & Fibre Co.

Plans of Republic Steel Corp., Birmingham, were estimated to involve $500,000. Gulf-Tex Drug Co., Houston, proposed its $100,000 winery; Wackman Welded Ware Co., Lake Charles, La., was ready to start work on its $150,000 steel barrel plant. Magnolia Pipe Line Co., Dallas, let contracts for a 225-mile butane line with an additional 85 miles proposed Procter & Gamble's Louisville, Ky., subsidiary, Buckeye Cotton Oil Co., had a $400,000 program under way with an additional $500,000 expenditure proposed. The dehydration plant proposed at Raymondville, Texas, for Evergreen Farms Co. was to cost $100,000. Shell Oil Co. started on a $1,000,000 alkylation plant at Deer Park refinery, Houston.

Railroads in September, when industrial contracts were higher than for any preceding month during the year, renewed their activity in making ready for roadbed improvements, ordering new equipment. Seaboard Air Line, Chesapeake & Ohio, Louisville & Nashville, Atlantic Coast Line, the Norfolk Southern and the Norfolk and Western were among these. Contract was reported for the $3,200,000 National Biscuit plant at Atlanta, Ga., and the first announcement was made on a $3,000,000 pulp and paper plant proposed at Pensacola by the Florida Pulp and Paper Co. The Southern Wheel division of the American Brake Shoe and Foundry Co. made awards for buildings under its $100,000 program. Fairfield-Western Maryland Dairy, Baltimore, continued its plans for a $1,600,000 plant project. Directors of Monsanto Chemical Co. approved construction of a diphenyl

unit at Anniston, Ala. American Compressed Steel, Inc., acquired a Kansas City, Mo., riverfront site and proposed a $125,000 investment. West Point Manufacturing Co. received bids for an extensive improvement program.

Industrial construction in October hit the highest point of the year. Duke Power Co. announced the $8,000,000 addition to its Buck plant, near Salisbury, N. C., as work went forward on a huge unit at its Cliffside station. Georgia Power Co., Atlanta, placed orders in connection with its $4,000,000 Macon plant. Another Commonwealth & Southern subsidiary, the Alabama Power Co., did likewise on its $3,500,000 Mobile plant. Florida Power & Light Co., designated the constructor for its $3,000,000 project at Dania. Virginia Public Service Co., of Alexandria, proposed its $2,000,000 steam generating station and Consolidated Gas, Baltimore, made awards in connection with the further extension of its facilities.

Kieckhefer's plant at Plymouth, N. C., operated as the North Carolina Pulp Co. made the awards under its $1,000,000 program. Rayon weaving facilities at South Boston, Va., were being expanded by the Carter Fabrics Corp. and a 50-per cent expansion of the $10,000,000 Celanese plant at Pearisburg was reported. Continental Oil Co., Ponca City, Okla., proceeded with its $1,500,000 building program. Shell Oil Co. announced contracts for a $600,000 Arkansas gasoline plant. General Electric Co. purchased the site for a Jackson, Miss., headlight plant.

November's total for Southern Industrial projects, while about one-half of the peak activity of the preceding month, was still far in advance of the other months of 1939. Ethyl Gasoline Corporation's $4,000,000 tetra-ethyl lead plant expansion at Baton Rouge, La., was the leading project, others being a 450-mile pipeline across three southeastern states for Gulf Oil Corp.; award for buildings of the $1,000,000 Nashville, Tenn., plant at Aviation Manufacturing Corp.; additional facilities to cost $125,000 at the Lone Star Cement plant, Manchester, Texas, and a $190,000 distillate recovery plant in east Texas for the Lone Star Gasoline Co.

Chesapeake & Potomac Telephone Co., Baltimore, prepared to start construction on its $1,000,000 office and exchange building; Celanese Corporation of America has under way $100,000 improvements at its Cumberland, Md. plant. An extension to the St. Louis, Mo., Coca-Cola plant involves $100,000. Brunswick (Ga.) Pulp and Paper Company's program is expected to cost $500,000. About $250,000 is to be spent at Houston, Texas, by the Pollock Paper and Box Co. The milk condensary to be erected at Statesville, N. C., by the Carnation Co. is to cost $200,000, and a fruit warehouse for the Gulf Mobile and Ohio, $250,000.

Among the projects active at the close of the Southern industrial year were: Superstructure for the Neuces Bay Station of the Central Power and Light Co.; addition to the Hohenwald, Tenn. plant of the General Shoe Co.; orders placed by Pacific Mills for plant equipment to be installed at Columbia, S. C.; Norfolk and Western Railway's $500,000 coal classification, storage yard and 200-car capacity repair yard at Lamberts Point, Norfolk; the $5,000,000 Florida-Georgia pipeline for the Southeastern Pipeline Co.; a $200,000 steel container plant at New Orleans, La., for Rheem Manufacturing Co.; Follansbee, Brothers' proposal to install cold reducing mills and complementary machinery at Follansbee, W. Va.

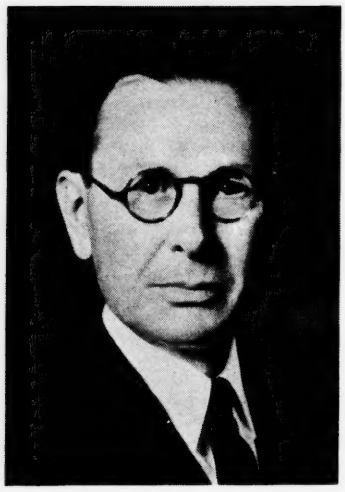
A milk condensery at Clarksburg, W. Va., for Carnation Co. is to cost $250,000. A furniture factory at Waxahachie, Texas; $110,000; an extension to double the output of the Sand Springs (Okla.) Textile Mills Inc., $500,000; a substation modernization program at Mobile for the Alabama Power Co., $250,000; Basin Pipeline Company's pipeline project from Big Spring, Texas; a construction program at the Ampthill, Va. plant of E. I. du Pont de Nemours & Co., Inc., $1,000,000; improvements in W. Va. by the Appalachian Electric Power Co., Roanoke, Va., $300,000; the Union Bag & Paper plant addition at Savannah, Ga., $100,000; proposal to double the cracking capacity of the

(*Continued on page* 70)

New Industrial Plants and Expansions in the South During December, 1939

Ala., Mobile—Alabama Power Co., modernization of substation	$250,000
Ala., Mobile—Teche Greyhound Lines, terminal	125,000
Ala., Montgomery—Wiregrass Electric Membership Corp., electric line	
Ark., Batesville—Arkansas Power & Light Co., power line	
Florida—Farmers Cooperative Committee, processing plant	15,000,000
Fla., Fort Lauderdale—Shell Oil Co., distribution plant	1,000,000
Ga., Atlanta—Trust Company of Georgia, garage	150,000
Ga., Columbus—Coca Cola Bottling Co., plant	
Ga., Savannah—Savannah Electric & Power Co., improvements	300,000
La., New Orleans—Rheem Manufacturing Co., plant	200,000
La., Springhill—Southern Kraft Corp., improvements	325,000
Md., Baltimore—Crown Cork & Seal Co., building	
Md., Baltimore—H. L. Bowers, terminal building	
Md., La Plata—Chesapeake & Potomac Telephone Co., improvements	38,000
Miss., Jackson—Great Southern Box Co., plant	150,000
Miss., Macon—Four County Electric Power Assn., cold storage plant	25,000
Miss., Meridian—East Mississippi Electric Power Assn., rural lines	184,000
Missouri—Chicago, Burlington & Quincy Railroad, modernization program at yards	75,000
Missouri—Union Electric Co., of Missouri, construction program	20,000,000
Mo., Kansas City—Sante Fe, Burlington, Rock Island and Missouri Pacific Railroads, produce terminal	1,000,000
Mo., St. Louis—John Tamming Machine Co., machine shop	30,000
Mo., Tipton—Co-Mo Electric Co-Op, Inc., electric lines	147,000
N. C., Black Mountain—Morgan Mfg. Co., manufacturing units	100,000
N. C., Enka—American Enka Corp., research laboratory	
N. C., Marshall—French Broad Electric Membership Corp., electric line	300,000
N. C., Shelby—Carnation Co., milk receiving station	40,000
Okla., Ardmore—Ben Franklin Refining Co., increasing capacity	
Okla., Enid—Union Equity Cooperative Exchange, wheat elevator	300,000
Okla., Sand Springs—Sand Springs Textile Mills, Inc., doubling output	500,000
S. C., Aiken—Aiken Electric Refrigerating Co-Operative, refrigerator and storage plant	
S. C., Bennettsville—Marlboro Electric Cooperative Inc., electric line	100,000
S. C., Columbia—Pacific Mills, machinery	1,000,000
S. C., Georgetown—Southern Kraft Corp., improvements	375,000
Tenn., Chattanooga—Station WAPO, improvements	40,000
Tenn., Columbia—Tuell Cheese Corp., addition to factory	50,000
Tenn., Fayetteville—Farmers Grain Co., rebuilding	25,000
Tenn., Memphis—Chicago & Southern Air lines, hanger, office building	150,000
Tenn., Memphis—Memphis Oil Co., improvements	
Tenn., Memphis—Southern Bell Telephone & Telegraph Co., expansion program	1,931,000
Tenn., Memphis—Swift & Co., ice cream plant	50,000
Tenn., Nashville—Tennessee Enamel Mfg. Co., extension	33,000
Texas—W. T. LaRue, power lines	200,000
Texas—Panhandle Eastern Pipeline Co., additions	3,500,000
Tex., Azle—Tri-County Electric Cooperative, rural lines	
Tex., Big Spring—Basin Pipe Line Co., pipe line	600,000
Tex., Bonham—Fannin County Electric Cooperative, electric lines	
Tex., Houston—Houston Packing Co., loading facilities	30,000
Tex., Houston—Lone Star Bag & Bagging Co., factory and warehouse	50,000
Tex., Houston—Earle C. Parker Co., factory building	40,000
Tex., Littlefield—Lamb County Electric Cooperative, electric lines	95,000
Tex., Mercedes—Magic Valley Electric Co., rural lines	37,000
Tex., Midlothian—DeWitt McDonald, frozen food plant	
Tex., Texas City—Pan American Refinery Corp., Catalytic unit	
Virginia—Chesapeake & Potomac Telephone Co., of Virginia, plant and equipment	1,000,000
Virginia—Chesapeake & Potomac Telephone Co., experimental stations	
Va., Ampthill—E. I. duPont de Nemours & Co., Inc., alterations and improvements	1,000,000
Va., Arlington—Chesapeake & Potomac Tel. Co., equipment	160,000
Va., Bowling Green—Virginia Electric Cooperative, electric lines	79,000
Va., Newport News—Chesapeake & Ohio R. R., fueling station	
Va., Norfolk—Norfolk & Western Railway, yards, etc.	500,000
Va., Prince George—Prince George Electric Cooperative, electric lines	135,000
Va., Suffolk—Community Electric Cooperative, electric lines	220,000
Va., Waynesboro—E. I. duPont de Nemours & Co., storage building, etc.	
Va., Waynesboro—Wayne Manufacturing Co., building	37,000
West Virginia—Appalachian Electric Power Co., improvements	300,000
West Virgina—Chesapeake & Potomac Telephone Co., equipment	60,000
W. Va., Clarksburg—Carnation Milk Co., milk condensery	250,000

COTTONSEED INDUSTRY 1939



BY

S. M. Harmon

Secretary, National Cottonseed Products Association

USUALLY when a season's crop of cottonseed is substantially smaller than that of the previous year, prices of seed and products advance. The supply of cottonseed from the 1937-1938 crop in the United States was the largest of record; 6,325,733 tons being crushed. The indicated and actual supply in 1938-1939 was about 30 percent less than that from the previous crop, consequently many operators anticipated that values would advance during the season which ended last July 31.

Unfortunately the expected did not happen. The season was one of declining prices, a condition brought about by generally lower prices for agricultural commodities and heavy increases in the production of lard and soybean oil and meal. These factors were ignored by many oil mill men whose mistaken judgment caused them to have operating losses for the season.

The cottonseed industry has weathered many storms. Therefore, those who are in the business have put the immediate past behind them and now look forward to future progress and service. Men who have created wealth from a once waste product aren't easily discouraged. Present markets must be maintained against aggressive competition and new outlets sought for cottonseed products. That's the task ahead, and one to which the industry is lending its efforts.

The prospective crush from the current crop is approximately the same as last season, about four and a quarter million tons. Cotton has been harvested rapidly and in most of the Belt, seed have moved steadily to the mills. In some sections sellers have held seed off the market, anticipating higher prices because of war conditions or otherwise. Values rose substantially in September, but softened, in case of oil, as the season progressed. It is probable that operators have proceeded cautiously and have, to a considerable degree, sold against purchases of raw material. Cottonseed prices have advanced materially with the season and will average above those for last year.

Although the pressure on cottonseed products from lard and soybean oil and meal continues unabated, the industry is maintaining its place in the markets very well. Imports of fats and oils for the first three quarters of 1939 were about equal to those for the same period last year, but were nearly 900 million pounds less than for the first nine months of 1937.

The demand for cottonseed cake and meal has been and is excellent. The drought throughout much of the Western cattle country has stimulated consumption to a marked degree. Educational work by the National Cottonseed Products Association, supplemented by advertising by individual units within the industry, has been most effective in creating sales of cake and meal. Both linters and hulls are moving freely into consumption, and at fair values.

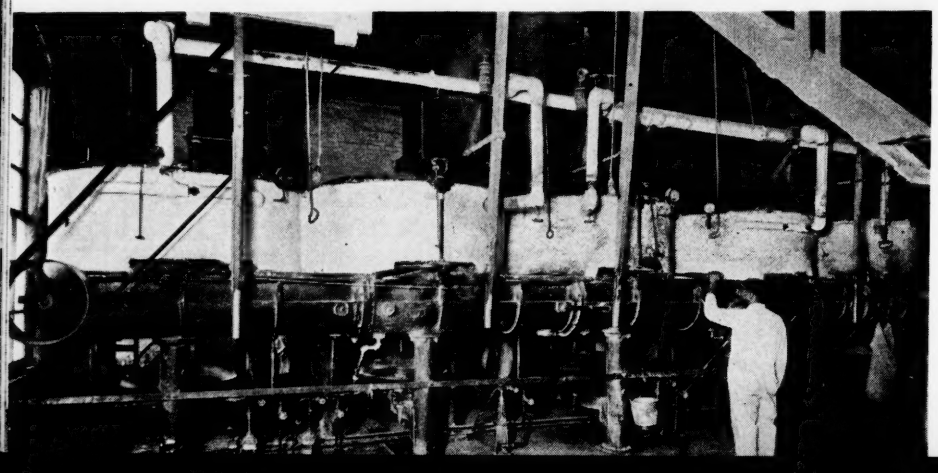
Cottonseed oil mill operators have striven for many years to bring about a more balanced system of farming in the Cotton Belt. They have felt that if cotton farmers would increase their production of livestock, the producers would be more prosperous, and because of richer soils, could still raise a normal supply of cotton. Incidentally there would be better outlets for the mills' meal and hulls. Figures show that the number of livestock on Southern farms is increasing rapidly, and despite a forty percent reduction in the acreage planted to cotton, the size of the crop is sufficient to the need for the staple.

Restrictive legislation by the Federal Government and by many States still hampers the free movement of cottonseed oil when sold in the form of margarine. Efforts have even been made in some midwestern states to tax cottonseed oil and other vegetable oil shortenings. These taxes are disguised as revenue measures but are in reality tariffs designed to prevent competition.

The consumers are not always going to support such discriminatory laws, especially where they only result in higher priced foods. It would appear reasonable that if the proponents of such legislation would devote their efforts to improving the quality of their products and to good merchandising, they would be too busy to try to destroy competition by having laws passed. There is always a need for *good* products, and he who makes them and practices sound methods of distribu-

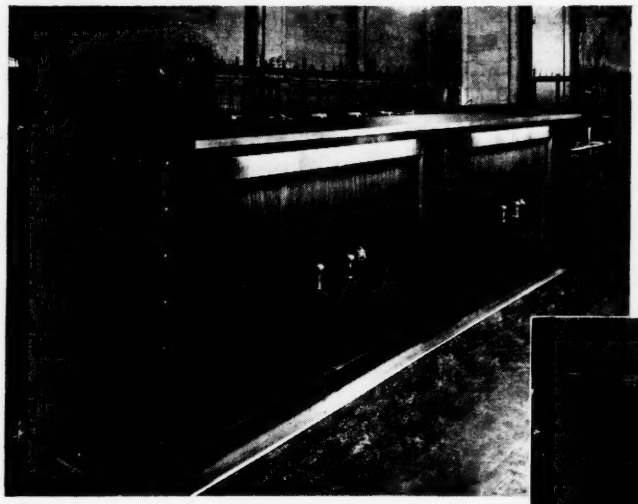
(Continued on page 62)

Inside a cottonseed oil mill



The Safe Sensation of The Century

YORK

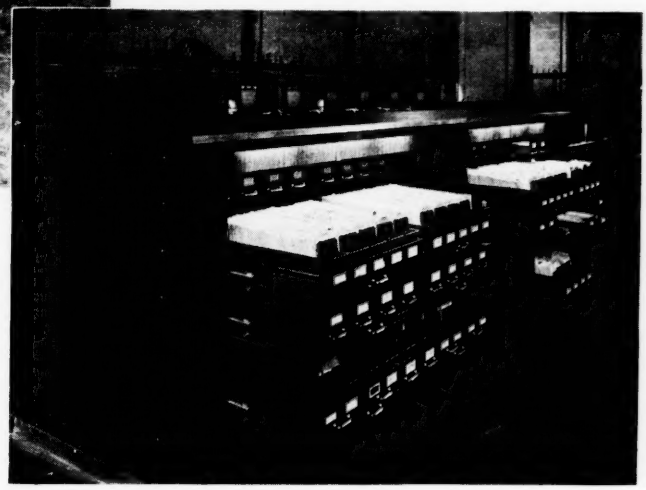


OUT-OF-SIGHT DOOR

(PATENTED)

SAFE LINE

An exclusive feature of the York Safe is the Out-of-Sight Door that is now made in all models in Class "A" and Class "B" construction. These heavily insulated doors can be opened and closed easily, sliding on a roller bearing track in and out of the concealed side pockets, out of the way and out of sight.



Illustrated above and to the right are part of 8 Safes recently installed in the Seamen's Bank For Savings, New York City. The Out-of-Sight feature allows York Safes to be placed alongside each other, side by side in solid batteries or placed in suitable corners. There is no aisle obstruction, no interference with other doors, nor office machines and equipment. The Out-of-Sight Door Safe saves valuable floor and aisle space.

Glide-Out-Cabinets are moved flush with outside front with ease.

Swinging door Safes necessarily waste floor space where a battery of Safes is used. Saving space means saving money. Therefore, the York Out-of-Sight Door Safe is economical protection.

Out-of-Sight Door Safes can be easily placed at point of use, combining accessibility with protection.

York's exclusive Glide-Out-Cabinet, an accessory feature, will bring all or part of the Safe interior equipment to the front so that every available filing inch can be utilized, even in the rear of topmost drawers. This convenient feature is found only in York Safes.

Baltimore	New Haven	*Foreign Offices*
Boston	New York	Buenos Aires
Chicago	Philadelphia	Havana
Cleveland	Pittsburgh	Honolulu
Detroit	San Francisco	Montreal
Houston	St. Louis	Paris
Los Angeles	Washington	Shanghai
Miami		Tokyo

YORK SAFE & LOCK CO.

FACTORY AND PRINCIPAL OFFICE

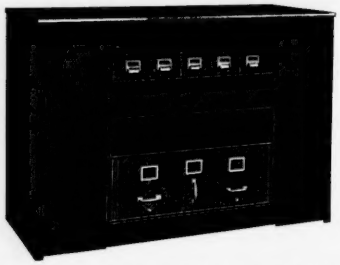
YORK PENNSYLVANIA

New Ways of Doing Things

Something New In Safes

The York Safe and Lock Co., York, Pa., has developed a new idea in safes. Originally intended for banks, where they give the appearance of ornamental filing cabinets, they are applicable to general business offices.

The manufacturer calls particular attention to a patented Out-of-Sight door which slides on a roller bearing track in and out of concealed side pockets. In



this way no extra room is occupied when the safe doors are open, thus avoiding interference with other equipment or other doors.

An accessory feature termed the Glide-Out-Cabinet is said to bring all or part of the Safe interior equipment to the front so that filing space is available to the last inch, even in the rear of the top drawers.

Abrasion-Resisting Ven-ite Floors

The Ven-ite Company Incorporated, 250 South Broad Street, Philadelphia, Pa., has perfected new methods of floor installation so that the advance in abrasive quality is declared to be a real innovation in better floors. A Ven-ite floor, according to a recent test by a well known engineering laboratory, gives twenty times the wear of the regular 1-2, cement-sand-mortar topping, and this resistance to abrasion is claimed to be the quality needed to prevent dusting and disintegration in cement floor finishes.

For Weatherproofing and Preserving

The oldest method known for preserving wood is probably that of charring, and it was this principle that suggested the idea for a new formula developed by Carbon Chemical Products, Inc., of Fort Atkinson, Wis., through which it is now possible to char almost any kind of material, including metal, concrete and asbestos, without the use of fire, for waterproofing and preserving such materials. The base of the product is charcoal obtained by burning hardwood to 800 degrees Fahrenheit. With about the same consistency and coverage as paint, the product is black in color and may be applied easily with a brush or spray to concrete, brick, plaster, any kind of roofing, canvas, paper, metal and all types of wood. It is non-poisonous and non-explosive; will not burn the hands, and is resistant to fire, common acids, salt, termites, etc. It is manufactured under the trade name of Kar-Bon-Seal. The company also makes another product, Kar-Bon-Sealuminum, which has all the properties of Kar-Bon-Seal but dries to a silvery finish and also serves as a heat deflector for roof work.

Glass Insulated Motor

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has recently built a glass-insulated motor with all coils insulated with woven glass tape. This permits it to run at very high temperatures, it is claimed, thus producing much more power for its size. Ordinary insulating tape would char under the temperature at which the motor is designed to operate, so the woven glass insulating tape is used. The motor is equipped with its own ventilating system consisting of a filter, motor and blower which forces cool, pure air to its windings.

Importance of Clean Tubes

As sludge, rust, scale, soot, coke or other fouling deposits possessing insulating properties begin to form in the tubes of boilers, condensers, oil refinery or other heat exchanging equipment, the efficiency of the equipment begins to decrease, bringing about increased operating costs. The complete removal of tube-insulating or tube-clogging deposits is comparatively easy and rapid, as well as inexpensive, if the operation of cleaning the tubes is

Wilson "Matched Units" for Tube Cleaning

undertaken as soon as the presence of such deposit is detected, or even suspected, and properly designed well-built tube cleaning equipment is used. Thomas C. Wilson, Inc., 55 Vandam Street, New York, has issued a 36-page bulletin presenting much interesting information on tube cleaning and describing the Wilson "Matched Units"—tube cleaner motors and cutter heads, specifically designed to work together and thus assure the maximum of efficiency from both when operating as a single unit.

Simplex Control Filter Watchman

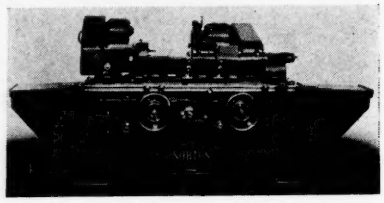
A new "telltale" device which automatically flashes a light signal when it is time to change or clean air-conditioning equipment filters has been introduced by Simplex Controls, a division of Herbusch Corporation, St. Louis, Mo. Easily attachable to all types of commercial or domestic installations, the device is claimed by the manufacturers to be the only combination pressure gauge and automatic signal embodying accuracy and dependability, with practical simplicity, long life and low cost. The attachment operates equally well with winter conditioning systems.

Dynamic Braking Control

For use on electrically-operated cranes and hoists, The Electric Controller & Manufacturing Company, Cleveland, Ohio, announces the "EC&M A. C. Dynamic Braking Hoist Control." This new control eliminates the mechanical load brake on the crane and is operated entirely from the alternating current source of power. It may be used with any standard A. C. wound rotor hoist motor. Three important features of this new magnetic hoist controller are: power saving, elimination of upkeep cost of mechanical load brake, and faster lowering speeds.

Norton Grinding Machines

Announcing a new universal grinder known as the Type LC Multipurpose, Norton Company, Worcester, Mass., declares the machine performs both external and internal grinding operations with equal ease. The base is a sturdily ribbed single casting with reservoirs for coolant and hydraulic oil being cast as an integral part. The table can be propelled hydraulically, or if desired, by hand through a two-speed arrangement. In the wheel feed mechanism, two ranges of feed are provided, either of which is selected by pushing in or pulling out a single knob. An electric dwell control for the hydraulic traverse mechanism is supplied as part of the machine equipment. The headstock is of the universal type and is driven by either a one-half horsepower constant speed A. C. or an adjustable speed D. C. motor. An interesting feature of the wheel slide is the quick adjustment. The machine swings 12 inches and is built in 24-inch, 36-inch, 48-inch and 72-inch lengths, ranging in weight from slightly over 5000 pounds to slightly less than 7000 pounds.



While bearing the same type designation as the earlier model a number of practical refinements have been incorporated in the new line of 10-inch cylindrical grinders announced by Norton Company. An outstanding change is the general appearance of the machine, a feature that necessitated a completely new base. Provision has been made for suspending the oil and coolant pumps vertically on springs so that the pumps can now run submerged. Type C machines are available with hand, hydraulic or mechanical traverse of the table, and can be converted from manual to automatic control merely by turning a switch on the front.

There's a SUPER-CITY right across the street!

Every city in America has been blended into one big Super-City *right across the street from you.*

Long Distance did it. You can pick up your telephone and reach any point in Super-City quicker than you could walk three blocks!

Super-City is brimming with new business. Your telephone will help you find it—help you sift the good prospects from the poor ones.

You can follow up a promising lead in Boston or close a profitable order in New Orleans—all in a matter of minutes.

Whether you're buying, selling, collecting, or delivering, Long Distance telephone service multiplies your ability to get places and get things done—in direct, *personal* discussion with the men who make decisions.

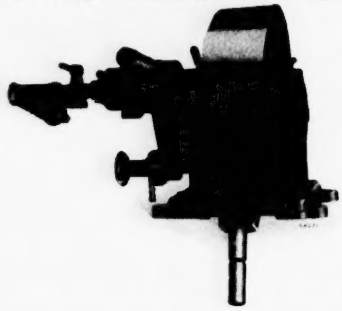
NEW WAYS OF DOING THINGS

Packless Expansion Joint

An improved and simplified, compact packless expansion joint for steam and hot water lines is announced by the American District Steam Company, North Tonawanda, N. Y. Known as the ADSCO Packless Expansion Joint, U-Ring Type, for low and high pressure and temperature service, the new joint has an expansion element operating on the principle of cold springing used in the installation of pipe bends. The element is a series of welded U-Rings of corrosion resistant steel welded to the steel body and the guide on the movable sleeve to form a permanent seal between the stationary body and the movable sleeve. The unit is illustrated and described in Bulletin No. 35-50A, issued by the company.

Steel Cutter and Shank Grinder

Designed to handle solid or hollow steels up to and including 1¼-inch hexagon, round or quarter octagon, Ingersoll-Rand Company, 11 Broadway, New York City, announces a new, size 500, combination drill steel cutter and shank grinder. The new unit is declared to cut steel cleanly and squarely in only a few seconds without burning, a quick acting, self-locking vise holding the steel rigidly



Ingersoll-Rand Steel Cutter and Shank Grinder

on both sides of the cut. It may readily be changed from a cut-off machine into a shank grinder by removing the cut-off wheel and substituting a grinding wheel. As a grinder it can be used for squaring up striking faces of the shanks of drill steel, moil points, chisels and the striking end of rock drill pistons. The machine is powered with an Ingersoll-Rand "Multi-Vane" Air Motor.

All-Neoprene Friction Surface Transmission Belt

Following three years' research and experimentation, Hewitt Rubber Corporation, Buffalo, N. Y., is now manufacturing an all-Neoprene Friction Surface Transmission Belt, designed to withstand the destructive action of mineral oils on rubber friction compounds. The new belt, known as the Duroil Hewprene Transmission Belt, has no natural rubber, the friction and skin compounds being of Neoprene synthetic oil proof material. Hewprene is the Hewitt trade name for products containing Neoprene, a Du Pont "base."

New Uses for Porcelain Enamel

Relating to a new industry—that of applying porcelain enamel to hot water tanks and to corrugated roofing and siding—Porcelain Steels, Inc., a new corporation of Cleveland, Ohio, announces two porcelain enameled products which should be of interest to home owners and to industry. Product number one is a scientifically designed and tested hot-water tank, coated inside and outside with porcelain enamels recently developed for this purpose by leading manufacturers of these finishes, notably the Ferro Enamel Corporation of Cleveland. They are tough and elastic enamels, capable of withstanding severe punishment of hot water under pressure and the corrosive action of hot water. The tanks are welded on a special machine developed and manufactured by the Federal Machine and Welder Corporation. This machine weighs 30,000 pounds and is capable of producing a longitudinal weld of tanks up to 60 inches in 9 seconds. The weld is made in such a manner that the seam is practically impossible to detect after the enamel is applied, nor does the weld fatigue the metal or create strain.

Product number two is porcelain enameled corrugated roofing and siding which is being made under the Kor-Lok patents. This is an interlocking type of corrugated steel coated on both sides with special porcelain enamels. An important feature is the complete concealment of all fastenings which hold the product to the building. There are no exposed nail holes to rust, and it is fireproof. Maroon, green, gray and black colors will be available, and for industrial operations requiring light reflectance a white undersurface is offered. No painting is necessary—only an occasional cleaning with soap and water to remove dirt film.

Donald D. Smith, president of Porcelain Steels, Inc., has had wide experience with enamels, having served with Briggs Manufacturing and other companies engaged in producing porcelain enamels. C. E. Murphy, recently with the Grand Rapids plant of Fisher Bodies as welding foreman, is manager of the Porcelain Steels plant, which is at Cedar and Ashland Road, Cleveland.

Stainless Expanded Metal

Possessing many advantages over ordinary expanded metal, especially where moisture or corrosive gases are present, Stainless Expanded Metal has found important new applications in the growing list of uses for Stainless Steel. Expanded stainless is now being used as a guard for electrical motors produced by a nationally known manufacturer, while another use is for vegetable display stands, since moisture and food acids will not affect stainless steel. Many other applications are broiler shelves for ranges, refrigerator shelves, utensil sterilizers, continuous dryers, air filters, service trays, safety guards, kiln shelves and storage bins. According to engineers of The American Rolling Mill Company, Middletown, Ohio, producers, Stainless Expanded Metal has all the advantages of stainless steel sheets.

Unusual Rubber Belt Application

The Moretti-Harrah Marble Company of Sylacauga, Ala., reporting to The B. F. Goodrich Company an unusual application of rubber belting, states that 4-inch, 4-ply Highflex endless belts 24 feet long are being used as slings for handling finished and unfinished marble. Two belts are used on each crane, and blocks weighing as much as 10,000 pounds are lifted. Transferred into belt stress, this equals ten times the tension usually required in transmission service, according to Paul W. Van Orden of Goodrich, but no failures of the Plylock splice employed have been reported.

Cutting-Off Machine

The American Instrument Company, Silver Spring, Md., announces a new machine of the bonded-abrasive wheel type for cutting glass, quartz, ceramics, metals, commercial and semi-precious stones, etc., in the form of sheets, rods, tubes and blocks. It cuts up to 3½ inches on materials with flat surfaces. By rotating the material as it is being cut, rods, tubing and the like can be cut up to 6 inches thick. True, clean cuts are made speedily and precisely by means of a motor-driven rubber-bonded abrasive wheel 12 inches in diameter (0.04 or 0.06

Improved Cutting-Off Machine

inches thick) without chipping or breaking the material. The machine is especially suitable for slicing all kinds of tubing, making extremely shorts cuts. The unit consists essentially of a non-corrosive cutting table adjustable for cuts of various angles; cutting wheel direct connected with a 115-volt, 60-cycle a. c. motor; centrifugal pump for pumping water from a built-in pump to the spray heads that play a steady stream of water upon the cutting wheel, mounted on a rigid steel stand. Bulletin No. MR 2074, issued by the company, presents full details.

WOVEN WIRE—
Catalog No. 50-37—"Audubon Metalwove Belts," showing numerous types of conveyor and processing belts which may be obtained in ductile metal most resistant to various operating conditions, such as flame, high temperatures up to 2100 degrees Fahrenheit, sub-zero temperatures, corrosion, contamination, abrasion, impact, etc.; various weaves, meshes and wire diameters are pictured.
Audubon Wire Cloth Corp., Richmond Street and Castor Avenue, Philadelphia, Pa.

FINANCE » » » *and* « « « *INDUSTRY*

Opinions of the outlook for the current year are generally optimistic although hesitation is evident about the course of business beyond the first quarter. Most industrialists and financiers who have offered opinions dwell upon the necessity for a more sympathetic and cooperative attitude of government before we can count upon steadily advancing prosperity.

Some think there will be a mild recession in steel in the first quarter; others think this will come in the second quarter of the new year. This notwithstanding the predicion that the output of automobiles in 1940 will probably reach 4,500,000, and the general belief that building—both industrial and dwelling—will be more active.

If there is a let-down in steel production it will not be surprising in view of the high average maintained in the latter part of 1939. To keep the mills going at the rate of 90 per cent and over for any considerable length of time would naturally lead to a decline in production due to the necessity for repairs.

Mills have no large stocks of steel on hand and it would not be unusual if stocks were increased during periods of pause in the demand. More intensive war operations, abroad now predicted for the spring, will increase the call for American metal products.

A few expressions from many received concerning business prospects for 1940 are printed below.

WILLIAM P. WITHEROW, President, Blaw-Knox Co., Pittsburgh, expresses the opinion in view of present indications 1940 business should be better on the whole than that of 1939, and says "the nation begins a new year with the weighted average of industrial activity comparing favorably to 1937 and 1929, and with more people employed in manufacturing industry than at any time in a decade.

"It is unfortunate that the employment situation has not been more thoroughly clarified. Industry is chronically indicted in certain circles for its so-called delinquency in providing jobs for an estimated '10,000,000 unemployed.' There is no foundation for the accuracy of this figure and true statistics of the total number of unemployed have not been available. This estimate, undoubtedly inflated, is carelessly used and profusely referred to by members of both parties as a political convenience."

As Chairman of the Committee on Employment of the United States Chamber of Commerce, Mr. Witherow states that "preliminary investigation shows the total registration throughout the nation of applicants for jobs, including those seeking benefits under unemployment compensation, is the much smaller figure of 5,500,000."

C. W. KELLOGG, President, Edison Electric Institute, says power output was up 12 per cent over 1938 and exceeded that of the boom year of 1929 by 38 per cent. New customers increased by 900,000.

Construction budgets for 1940 will amount to $600,000,000.

Transmission line mileage which was 26,400 in 1917 and had risen to 120,000 miles in 1929, reached 146,000 miles in 1938.

(*Continued on page* 54)

Finance *and* Industry

(Continued from page 52)

JOHN D. BIGGERS, President, Libbey-Owens-Ford Glass Co., "There are reasons to believe that the two biggest markets for flat glass—automobiles and building—are going to be very active. From 2,500,000 to 3,000,000 new homes are needed in the next five years."

J. J. PELLEY, President, Association of American Railroads—freight traffic is at a higher level than since 1936, and there has been an improvement in earnings. Freight traffic is approximately 10 per cent higher than a year ago and 18 per cent above two years ago. Freight traffic from August to October showed greatest increase for any similar period on record amounting to 25.5 per cent. Carloadings reached peak in week ended October 21, with 861,198 cars.

H. W. PRENTIS, JR., recently elected **President National Association of Manufacturers, also President Armstrong Cork Co., Lancaster, Pa.,** believes American business should show a gain of 10 per cent during 1940 over 1939. He urges "governmental business baiters" make peace with industry and says "through sympathetic understanding between business and government millions of unemployed soon will have jobs."

E. R. STETTINIUS, JR., Chairman United States Steel Corporation, "We look forward to the new year encouraged by the substantial improvement in the steel industry during the past four months. * * * There are many uncertainties and difficulties yet to be solved before a sound basis for sustained progress can be realized. The future course of American business depends to a large extent upon the solution of our domestic problems. Industry can prosper only when a feeling of confidence permits the full utilization of our great resources putting back to work both idle capital and idle men."

LANGBOURNE M. WILLIAMS, JR., President, Freeport Sulphur Co., "Sulphur's part in latest industrial developments was again emphasized during 1939 with the introduction of the alkylation process for making high octane aviation fuels. Five plants producing alkylation fuels are already in operation and six others are being built or planned.

"Reduction of imports of sulphite pulp greatly stimulated domestic production and corresponding consumption of sulphur. Shipments in 1939 of sulphur were the third largest in history, totaling 2,170,000 tons. The sulphur industry feels the effects of the remarkable growth of chemistry, and for the new year there are indications that chemistry's impressive showing in 1939, when output was valued at more than $1,000,000,000, will be surpassed. It is estimated that expenditures for plants and plant extensions in the chemical industry will total over $100,000,000 in 1940."

Secretary of Commerce Hopkins, in his year-end business statement, estimates the national income for 1939 will finally add up to $70,000,000,000, which is an increase of $4,000,000,000 over 1938, but $2,000,000,000 under 1937

* * * *

According to an estimate made by the Association of American Railroads freight car loadings in the first quarter of 1940 are expected to be 12.1 per cent above actual loadings in the same quarter of 1939. It is expected there will be 5,123,227 cars utilized in the first three months of this year in handling twenty-nine principal commodities.

INDUSTRIAL NEWS

Heating and Ventilating Exposition

The Sixth International Heating and Ventilating Exposition—The Air Conditioning Exposition—promises to be one of the most successful in this biennial series, according to announcement. It will be held at Lakeside Hall, Cleveland, Ohio, January 22 to 26, 1940, under the auspices of the American Society of Heating and Ventilating Engineers in conjunction with their annual meeting. The National Warm Air Heating and Air Conditioning Association will also hold their annual meeting at Cleveland during the same week. Nearly 300 manufacturers have engaged exhibit space. Charles F. Roth, President of the International Exposition Company, Grand Central Palace, New York City, will be in charge.

Manufacturing Facilities Offered

Property comprising the Detroit plant of Continental Motors Corporation, at Jefferson and Algonquin Avenues, Detroit, Michigan, will be offered at auction on Monday, January 15, at 7:30 P. M., at the plant. Included in the sale will be more than 500,000 square feet of modern manufacturing space, surplus machine tools, valuable frontage on Jefferson and Kercheval Avenue, one 4-family apartment, one 2-story dwelling, one small welding shop, etc. The property will be offered in its entirety and in individual and group parcels. Illustrated literature, terms, machinery lists and information may be obtained from Gerth's Realty Experts, auctioneers, or Piper-Hesse Company, realtors, 2410 Eaton Tower, Detroit.

Hewitt Rubber Distributors

Hewitt Rubber Corporation, Buffalo, N. Y., announces the appointment of the following Southern distributors: Wimberly & Thomas Hardware Co., Birmingham, Ala.; Machinery & Supplies Company, Kansas City, Mo.; Texas Belting & Supply Company, Houston, Tex., and C. D. Franke Company, Inc., Charleston, S. C. The new distributors will operate under the exclusive Hewitt Rubber Franchise plan, handling a complete line of industrial rubber goods.

Iron and Steel Products Close Tulsa Office

Iron & Steel Products, Inc., Chicago, (Hegewisch Station) Ill., Frank Parker, President, announce the closing of their branch office at Tulsa, Oklahoma, and that all business of the Tulsa office, for the time being, will be handled from Chicago.

60th Anniversary of Moore Dry Kiln Company

Moore Facts, Bulletin No. 3912, official publication of the Moore Dry Kiln Company of Jacksonville, Fla., features the 60th anniversary of the company, which has had a record of 60 years of uninterrupted and proven progress. Lafayette Moore, better known as "Dry Kiln" Moore, founder of the company, is said to have built the first steam heated dry kiln in the South. This was in 1879, and since that time many thousands of lumbermen have installed Moore dry kilns. In those early days there were no instruments to regulate or control dry kilns and few people knew the elementary scientific principles involved in the seasoning of lumber. Moore dry kilns and equipment now include all devices for seasoning lumber in the most efficient manner, and for handling it to and from the kilns. The company's latest achievement is the development of the Moore Autographic Master Controller, a recorder-controller made especially for dry kilns. It controls temperatures and humidity, and regulates the ventilation of the kiln.

Portland Cement Association Appointment

The Portland Cement Association, Chicago, Ill., announces the appointment of W. H. Hitzelberger as district highway manager for Texas, effective October 1. For the present, Mr. Hitzelberger will continue to maintain an office in the Republic Bank Building, Dallas.

Froehling and Robertson Expand

Expanding into a new but related field of operation, Froehling & Robertson, Inc., inspection engineers and chemists, with main offices and laboratories at Richmond, Va., announce the establishment of a Tidewater inspection service on coal shipments in the Hampton Roads (Newport News and Norfolk, Virginia) area under the direction of W. K. Black, Room 107, C & O Terminal Building, Newport News. The company also will handle shipments going through the Port of Baltimore, Maryland, as well as commissions at the mines.

1940 Calendars

Among the 1940 calendars reaching the office of the Manufacturers Record are those from the following: The Bull Dog Floor Clip Company, Winterset, Iowa; Rose Exterminator Company, Baltimore, Md.; manufacturers of pest control products; A. W. Harrison & Sons, Inc., Baltimore, Md., engravers, electrotypers and stereotypers; International Harvester Company, Chicago, Ill., manufacturers of farm operating equipment, motor trucks, etc.; General Electric Company, Schenectady, N. Y., makers of electrical equipment; Baltimore Stationery Company, 115-117 East Lombard Street, Baltimore, Md.; Allis-Chalmers Manufacturing Company, Milwaukee, Wis., tractors and other industrial machinery; Pennsylvania Railroad; The Cooper-Bessemer Corporation, Mt. Vernon, Ohio, manufacturers of engines and compressors; Koppers Company, Pittsburgh, Pa., "the industry that serves all industry," issues 1940 Koppers Calendar, showing thirteen natural color photographs of Koppers products and their applications; O. F. H. Warner & Co., Inc., Baltimore, Md., paper, stationery, supplies, etc.; O. J. Maigne Co., New York, N. Y., printers' rollers; West Virginia Pulp & Paper Co., New York, N. Y., manufacturers of WESTVACO Mill Brand Papers; Baltimore Commercial Bank, Baltimore, Md.

TRADE LITERATURE

"Industrial Hazards of Static Electricity"—The foregoing is the title of a booklet prepared by Harold J. Davis, safety engineer, 3927 East Admiral Place, Tulsa, Okla., its purpose being to present some of the electrostatic hazards encountered in industry and suggesting means for overcoming them. The price of the publication is 25 cents.

Gas Engine Handbook—This is the first handbook on gas engines ever produced by the American Gas Association. It was prepared by the Gas Engine Power Committee, of which D. W. Reeves of the Oklahoma Natural Gas Company, Tulsa, Okla., is chairman, and is published by the Industrial Gas Section of the American Gas Association, 420 Lexington Avenue, New York City, through the cooperation of the Pacific Coast Gas Association. C. Remschel of the Southern Counties Gas Company of California is the author of most of its contents which consist of data and information he has collected over a period of years.

"Wrought Iron—Its Manufacture, Characteristics and Applications"—First published in 1936 as a reference work for engineering organizations, this publication has become a standard engineering text in more than one hundred technical schools and colleges. The book was completely rewritten this year and several chapters added, the full content now embracing twelve chapters on the following subjects: Wrought Iron, Wrought Iron Manufacture Prior to 1850, Modern Developments and Research in Wrought Iron Manufacture, The Present Day Method for Manufacturing Wrought Iron, The Introduction of Other Ferrous Metals, Quality Standards for Wrought Iron, Specifications and Durability Testing, The Characteristics of Wrought Iron, The Forging and Bending of Wrought Iron, The Welding of Wrought Iron, The Principal Applications for Wrought Iron, Material Selection. The publication also contains a glossary of terms relating to wrought iron manufacture and products. Prepared by James Aston, Consulting Metallurgist, and Edward B. Story, Chief Metallurgist, both of A. M. Byers Company, Pittsburgh, Pa., the book is published by that company and is priced at $1.00.

Lockwood's Directory of Paper and Allied Trades—The 1940 edition of Lockwood's Directory—the 65th annual edition of the publication—covering the paper and allied trades of the United States and Canada has been issued by the Lockwood Trade Journal Co., Inc., of New York City. While a comparatively few mills have been built and put in operation during the year, there have been numerous changes in the names of companies, grades of paper produced, etc., which have made it necessary to make many changes in the mill section of the directory. The list of idle mills is considerably less than in recent years, it is observed, and this is accounted for by the fact that the production of both pulp and paper has been expanding rapidly, especially during the latter half of the year. That section of the directory devoted to mill equipment, supplies and technical service continues to show a good growth. With many articles constantly required in pulp and paper mills listed in this section, this portion of the directory makes a convenient source of reference as to where such equipment and supplies may be obtained. Many changes and additions have been made in all sections of the directory, the regular edition of which contains more than 1200 pages. The Travelers' edition contains about 250 pages and contains only the pulp and paper mill section. The cost of each edition is $7.50 or $7.00 cash with order.

BOILER PROTECTION, ETC.—
Technical Data Sheet No. 2911—Covering the protection of boilers, piping and turbines for Virginia Public Service Corporation, Hampton, Va., by the Cochrane Deaerator.
Cochrane Corporation, 17th Street and Allegheny Avenue, Philadelphia, Pa.

AIR PREHEATER—
Catalog—illustrating and describing the Ljungstrom Air Preheater, used for recovering heat from flue gas, preheating combustion air, improving boiler efficiency, increasing steaming capacity, and effecting substantial fuel savings in public utility and industrial steam power plants; two general types are shown and described which differ only in details of construction to accommodate horizontal or vertical flow of the flue gas and combustion air.
The Air Preheater Corporation, 60 East 42nd Street, New York, N. Y.

FIREPROOFED WOOD—
Catalogue — "Facts About Fireproofed Wood," reprinted from Sweets, illustrating and describing various treatments for fireproofing wood, the treatments enumerated on pages 8 and 9 tallying with those enumerated in the book "Wood Preservation" by George M. Hunt of the U. S. Forest Products Laboratory and Prof. George A. Garrett of Yale University Forestry School.
Protexol Corporation, Kenilworth, N. J.

ZINC ALLOY DIE CASTINGS—
Booklet—"Zinc Alloy Die Castings in Small Tools," illustrated, presenting in pictorial form actual products, wholly or partly composed of zinc alloy die castings—products required to have strength and durability.
The New Jersey Zinc Company, 160 Front Street, New York City.

WATERPROOF PAINT—
Folder—devoted to "Porce-Tite," a modern, white waterproof paint for exterior and interior masonry and porous type surfaces.
Porce-Tite Products, Inc., manufacturers, Chicago; **Bedard & Morency Mill Co.,** 101 North Lombard Avenue, Oak Park, Ill.

EQUIPMENT THAT PAYS FOR ITSELF—
Folder—outlining important features of Allis-Chalmers products engineered to pay for themselves and illustrating several of them.
Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

HIGH-TEMPERATURE STEELS—
Technical Bulletin No. 12-A—presenting condensed technical data on high-temperature steels with revised useful information and technical data on B&W Seamless Alloy Tubes for high pressure and high temperature services, etc.
The Babcock & Wilcox Tube Company, Beaver Falls, Pa.

FRISCO RAIL SERVICE—
Official Publication—"Frisco First," Vol. 5, No. 3, for January and February, 1940, presenting interesting Frisco news items and illustrations.
St. Louis-San Francisco Railway.

FOUR-CYLINDER COMPRESSORS—
Bulletin No. 651-A—"Ice and Frost," official publication, devoted to large Frick four-cylinder compressors, with illustrations showing the machines and applications.
Frick Company, Waynesboro, Pa.

Cotton Textile Outlook

(*Continued from page* 40)

tion per spindle there has been a steady increase in machine efficiency. Evidence of this is contained in the U. S. Census figures that show periodically the amount of raw cotton processed and the number of spindle hours required. For example, in 1930 each operating spindle processed on the average .034 lbs. of raw cotton per hour. By 1935 the poundage had increased to .036; by 1939 to .039. The basic data for this important analysis are shown below:

PRODUCTIVITY OF COTTON SPINNING SPINDLES, 1922-1939
BUREAU OF THE CENSUS DATA

	Raw Cotton Processed Net Weight* (*Millions of Pounds*)	*Spindle Hours* (*Millions of Hours*)	*Cotton Processed per spindle hour* (*Pounds*)
1922	2,909.8	92,813.9	.0314
1923	3,121.1	99,508.3	.0314
1924	2,637.1	80,274.8	.0329
1925	3,074.7	94,600.1	.0325
1926	3,214.8	97,028.6	.0331
1927	3,587.7	104,450.2	.0343
1928	3,184.2	92,728.9	.0343
1929	3,422.7	99,899.7	.0343
1930	2,610.9	76,702.7	.0340
1931	2,656.6	77,793.3	.0341
1932	2,463.3	70,218.3	.0351
1933	3,052.5	86,580.2	.0353
1934	2,655.4	75,711.4	.0351
1935	2,754.7	76,017.4	.0362
1936	3,470.2	91,773.3	.0378
1937	3,657.1	95,591.1	.0383
1938	2,904.4	75,925.2	.0383
1939 (10 mos.)	2,965.0	75,716.2	.0392

*Represents number of bales consumed in the calendar year multiplied by the average net bale weight of the current and the previous year's crop.

Fertilizers 1940

(*Continued from page* 41)

consumption last year, and is increasing. Previous to this year, potash in the sulphate form, which is essential for the growing of certain grades of tobacco, was imported from Europe. Two of the American producers are now making sulphate of potash and their output, together with imported stocks now on hand, will be sufficient for the next tobacco crop.

European imports of potash were formerly handled by one company which ceased to exist when war was declared between France and Germany. Two new companies have been formed in this country, one to import potash from France, and the other from Germany through neutral countries. Developments of the War will determine the extent of these operations, though it seems probable that some cargoes of French potash at least will be available.

As to American production, refinery capacity may not be sufficient to permit the manufacture of all our potash requirements in the form of high grade 60 per cent muriate. However, mining capacity is sufficient to supply all the balance in the form of 25 per cent manure salts, perfectly satisfactory as a fertilizer material, but, of course, subject to more transportation cost per unit of potash content. In addition new production is promised early next year. Our entire potash requirements seem assured.

In connection with phosphoric acid the third primary plant food, a survey made last year indicated a plant capacity sufficient to produce twice as much available phosphoric acid in the form of superphosphate as our consumption requires. Our normal annual production has been running between four and five million tons of superphosphates, all calculated to a basis of 16 per cent available phosphoric acid. The reported capacity on the same basis is over 10,800,000 tons.

As to raw materials for superphosphate production, sulphur for the manufacture of the necessary sulphuric acid is produced within our own borders in quantities sufficient for all needs. The industry's own production of sulphuric acid will be available for superphosphate manufacture as it will not be needed for the manufacture of nitric acid.

During the hearings before the Congressional Joint Committee to Investigate the Adequacy and Use of Phosphate Resources, it developed that our reserve supplies of high grade phosphate rock are much greater than had been estimated and that there were even greater reserves of lower grade rock that could be beneficiated by modern methods so as to produce usable grades. High grade rock reserves are sufficient to last at least 3,000 years. Mining capacity is adequate to supply the domestic demand and provide a million tons more for export. Curtailment of exports to Europe leaves even more capacity for domestic consumption if needed. There seems no reason to doubt that there will be enough superphosphate to meet every need.

Jute from which burlap bags are made, is produced solely in India. England has requisitioned most of the supply for use as sand bags to protect buildings from bomb attacks, and prices have risen pronouncedly. Heretofore most fertilizer has been packed in burlap bags, because they were somewhat cheaper. Cotton bags and paper bags are available for all needs and can be used satisfactorily for fertilizer shipment if burlap is unobtainable or too high priced. Other materials usually used in the manufacture of fertilizer, such as limestone and dolomite, are known to be obtainable in sufficient quantity to meet all normal requirements.

What effect the European wars will have on the price of fertilizers and fertilizer materials can not be accurately forecast at present, but there seems to be no indication that there will be any unreasonable price advances. Burlap, of course, is selling now at more than double the normal price. Ocean freights and insurance have materially increased. The Federal Wage and Hour Act has increased minimum wage rates and reduced maximum hours of work. Prices of some fertilizer materials have advanced, particularly natural organic sources of nitrogen. All of these factors will undoubtedly have some effect on fertilizer prices but many firms had at least partially covered their requirements before these rises and substitutes will be used whenever possible.

The manufacturing facilities of the industry are in good operating condition and are fully capable of meeting a consumption demand considerably in excess of the normal use of 7,000,000 to 8,000,000 tons. Stocks of raw materials and manufactured goods are about normal for this time of year.

We feel confident that the plant food requirements of agriculture for the next growing season will be fully met by the fertilizer industry at prices not unreasonably higher than those prevailing during the past season.

"Carolina Gardens"

E. T. H. Shaffer in "Carolina Gardens" presents delightfully the history and charm of a section of the South which makes a strong appeal to all lovers of the beautiful.

The work has been enlarged by the inclusion of chapters on North Carolina gardens, and these with admirable illustrations are a noteworthy addition. The book describes and illustrates wondrous gardens from the South Carolina Low Country to the western North Carolina mountains. It is excellently done.

University of North Carolina Press, Chapel Hill, N. C.—$3.50

Pulp Man's Paradise

(*Continued from page* 38)

Growths of Casurina on the Florida keys would furnish sufficient timber for pilot paper mills. Islands are ideal for growing timber because of the reduced fire hazard. Other tracts of Florida plains, surrounded by swamps, offer opportunities for planting under conditions relatively safe from fire.

Australian pine, because it is not deep rooted, offers less resistance to fire than many other trees, but in cultivation this is compensated by the fact that a timber supply can be concentrated in a smaller area, reducing overhead for protection and cutting transportation costs.

The Florida state forestry service estimates that 120,000 acres under forest management are needed to supply a 200-ton mill with slash pine. The same mill would be supplied adequately by a 24,000-acre tract of Australian pine. While 120,000-acre tracts are rare, 24,000-acre tracts are common in Florida.

An advantage in addition to rapid growth that Australian pine has over jackpine results from its greater density. Australian pine weighs 40 pounds per cubic foot, compared with 32 pounds for most other pulp woods. This means a 25 per cent greater capacity for cookers the same size and 25 per cent greater capacity per cubic foot on trucks or cars used to haul the wood from the field.

While the general impression of Florida may be a land of orange groves interspersed with fresh water lakes and swampland, the State, in fact, has vast areas of sandy plains and near deserts where few plants will grow because of the long dry season and poor soil.

Australian pine will thrive on such land. One species of Casurina puts nitrogen back into the soil, increasing the fertility as it grows. Leaving slashings on the land when trees are cut would be a means toward greater fertility. Needles from the trees add humus to the soil.

As lumber, Australian pine is definitely handicapped. It is so hard when dry that it is almost impossible to saw, yet it splits when a nail is driven through it. It has a high B.T.U. content which should make it valuable as a fuel. It kindles and burns like anthracite.

Experiments conducted at the Department of Agriculture's forest products laboratory in Madison, Wis., some years ago resulted in a report that Australian pine fiber produced by sulphate process was too short for Kraft paper, but was easily bleached. In the light of this research, we experimented with soda (alkaline) cooking, run in a direct fired cooker, and produced pulp with an alpha cellulose content of 90 to 95 per cent and a 40 to 42 per cent yield on a dry basis. Pulp thus produced requires not to exceed six per cent bleaching powder, 35 per cent available chlorine, to obtain a product equal in whiteness, to the eye, to bleached sulphite spruce, thereby effecting a considerable saving over pine in the quantity of chlorine used.

The present chief source of book papers in the United States is second growth hardwood trees of the eastern mountain ranges—oak, gum, tupelo and poplar. These trees are comparatively slow in growth, yielding a small fraction of a cord per acre per year.

The wood is cooked by the soda process, then admixed with 15 to 50 per cent sulphite spruce, the hardwood pulps being used as filler and to give softness and pliability. Australian pine would have a great advantage over other hardwoods because of its rapid growth and the low cost of bleaching.

Australian pine pulp is soft and short fibered, with a good interlocking character that should make it an excellent filler for book paper when combined with bleached Kraft fiber, or bleached sulphite pulp. Its characteristics meet and better the minimum specifications for a Xyanthate pulp. Unbeaten, hand couched mats prepared in our laboratory were found to be 10 per cent stronger than yellow typewriter second sheets, weight for weight.

While our equipment has not made it possible to produce quantities of pulp large enough to test in a pilot rayon plant, small quantities of rayon have been spun by hand, giving a satisfactory rayon thread.

Australian pine requires delicate control to produce pulp of proper characteristics and is subject to over cooking. However, with proper methods it presents no difficulty. We have developed an electrical method of control, using a Wheatstone bridge to determine the relationship between the electrical resistance of the cooking liquors and the alpha cellulose content of the resulting pulp. Experimental difficulties encountered while determining resistance of the fluids at 175 degrees centigrade and 200 pounds per square inch pressure have been overcome by using automobile sparkplugs with platinum points.

This control research has been substantially completed, and pulp in quantities large enough for commercial testing can be produced as soon as proper equipment is available.

We also experimented with the nitric acid process, which now is being used to cook pulp from aspin trees in Michigan. We found, however, that this method produced pulp with a lower alpha cellulose content.

Development of the electrical control method suggests a possibility for the manufacture of gun cotton. This propellant has been made exclusively from cotton because a uniform product must be assured for accuracy in calculating the distance a shell will travel. It is hoped that by means of electrical control uniform results in manufacture may be obtained even though the raw material may not be as homogeneous as cotton.

Pulp from Australian pine is not suitable for newsprint, paper or cartons. It has not been investigated as a fibre for wall board and pressed woods. However, any interested person can obtain a sufficient quantity for such tests from the University of Tampa.

The Australian pine investigation was started as a practical method of teaching —to show students how to attack research problems. It was chosen because it had local interest in Florida and therefore would command more wholehearted attention. More than 25 undergraduates and graduate students have worked on the project. So, although Casurina still is in the laboratory stage as a source of pulpwood, it already has brought practical results in that experienced chemists have gone forth on Commencement Day.

Cottonseed Industry 1939

(*Continued from page* 46)

tion by selling his goods on their own merits, will probably have to expand production to meet demand.

Taken by and large, there is no more important industry in the Cotton States than the one comprising the cottonseed oil mills. It produces some three million tons of livestock feed annually in the form of cake, meal and hulls. The output of cottonseed oil averages about one and a quarter billion pounds of edible oil per season. When the supply of seed is ample and prices good, there is nothing in the Belt that adds more to the prosperity of the region. Therefore, anything that limits the distribution of cottonseed products helps to impoverish a free people and should not be permitted to exist.

A Square Deal Not New Deal

(*Continued from page* 26)

The form of socialism which the New Deal is practising is headed for and is rapidly moving on toward fascism, with considerable encouragement to communism.

Business does not need the New Deal, but it is in dire need of a square deal.

How can we cure our country of this insidious thing that is gnawing at its very life?

There is a remedy. It has been tried, it has been tested, and it has stood the test.

We may not like to admit it, but it is rugged *individualism in democracy.* Democracy is the only atmosphere in which the individual can develop and the individual is the one that can develop democracy.

The isms of Europe destroy democracy and down goes the individual.

Railroad Reserve Capacity

(*Continued from page* 35)

late 'twenties without giving consideration to other elements in the picture. I merely point out that **during the eight years 1923-1930 the railroads spent $6,741,716,000 in capital improvement work in modernizing the rail plant.** These expenditures have had the effect of reducing the ratio of maintenance costs; just how much, it is difficult to say. There are, too, other factors in the picture.

That there is some undermaintenance when gauged by conditions of the late 'twenties is probably true, but it is often overemphasized. **In the year 1938, the latest year for which figures are available at this time, there were fewer accidents due to equipment or roadway defects or failures per train-mile than in any previous year in railroad history, and this record was made in the year of fastest train speeds.** Such a record could not have been made with undermaintained properties.

Maintenance expenses during the last quarter of 1939 were greater than for the corresponding quarter of any year since 1930. For maintenance of way and structures, expenses during the last three months of 1939 exceeded those of the same months of 1938 by 16 per cent and those of the same months of 1932, the low point, by 62 per cent. For maintenance of equipment, expenses of the last quarter of 1939 were greater than those of the corresponding quarter of 1938 also by 16 per cent and those of the same quarter of 1932 by 39 per cent.

From the standpoint of equipment, such increased expenditures resulted in reducing the ratio of unserviceable freight cars from 13.8 per cent on September 1 to 9.8 per cent on December 1, and the ratio of unserviceable locomotives from 19.5 per cent to 16.6 per cent at the same respective dates.

From the standpoint of roadway and structures, increased maintenance expenses mean a stepping-up of rail and tie renewal programs, cleaning and replacement of ballast, and other work of similar nature. Normally the bulk of such work is done during the second and third quarters of the year because of more favorable weather conditions. The unusually heavy maintenance expenses of the last quarter of 1939 reflect the progress of the current railroad program to keep reserve capacity well ahead of traffic demand.

Conclusion

I close with a word or two about other developments of interest during the year. From a financial standpoint, the year's net results approximate rather closely those of 1937. The cariers as a whole earned about 2¼ per cent on their property investment and earned a net income over and above fixed charges of about $95,000,000. As in the past, a number of individual companies were "in the red" for the year, although it is too early to give complete data in this respect.

Railroads of the South shared in the increased business and earnings of the last four months of the year. Class I carriers in the Pocahontas, Southern and Southwestern Regions increased their net railway operating income (before interest) for the year by about $50,000,000 over 1938. Roads in the Pocahontas Region again earned a substantial margin over and above fixed charges. Roads in the Southern Region, or in the states of North Carolina, South Carolina, Florida, Georgia, Alabama, Kentucky, Tennessee and Mississippi, reversed their positions in the matter of earning fixed charges, failing to earn charges in 1938 by a little less than $10,000,000, and actually earning charges in 1939 with about $10,000,000 to spare, thus just about breaking even in the two-year period. Roads in the Southwest again failed to earn their fixed charges by a substantial margin, although the deficit for 1939 was probably only about one-half as great as that for 1938.

Congress gave much consideration during the year to railroad legislation. Each house passed a separate bill designed to equalize, to some extent at least, regulation of the various agencies of transport. This bill, S-2009, came to be known as the "omnibus" bill. Other constructive measures are included in these bills, as well as some not so helpful. As the session closed, however, the conference committee of the two houses appointed to reconcile differences in these bills had been unable to meet, so that further action will be delayed until 1940. The Chandler bill, designed to enable hard-pressed roads temporarily to reduce their fixed charges without going into receivership, was enacted into law.

Events abroad make it difficult to predict what the coming year will bring. Forecasts of business activity for the first quarter of 1940 are favorable. It seems likely that the two Houses of Congress will get together on the "omnibus" bill and that with some modifications it will be enacted into law. Railroads will undoubtedly continue to build up their reservecapac ity, keeping well in advance of the demand for their services.

South's Lumber Industry Prepared for War Developments

(*Continued from page* 39)

was kept in mind. Shipping facilities, availability and supply of freight cars, etc., were known and utilized to the best advantage. Close check was maintained on stocks at individual mills, their timber supplies and resources and its character.

Today the industry has enlarged and improved upon its technique in such matters. Some time ago, virtually at the outset of the present hostilities in Europe, the Southern Pine Association, in order to be prepared for any eventuality, began gathering and compiling for quick and efficient access, information and data which might be useful at a later date and under changed conditions. The Association knows the capacity of virtually all the Southern pine sawmills, their location, equipment and facilities; those that can put on double shifts, or otherwise increase their production; their supply of timber and its character. Current stocks of standard items of lumber at the mills are known to the Association, and mills that are able to furnish pre-cut or prefabricated material for rapid erection of houses or cantonments are listed.

An Industry Committee, comprising both subscribers and non-subscribers to the Southern Pine Association, and whose membership is thoroughly representative of all types of operations and of the entire industry, throughout the lumber producing territory, has been formed and is prepared to operate promptly and efficiently, and take action agreeable to the industry as a whole, to fulfill whatever demands may be made by the Government for materials or service.

Individual manufacturers have been advised and are prepared to keep constantly informed as to their stocks on hand, timber supplies, character and quality of their timber which may be required to fill orders of the Government for specific items of lumber and timbers. Sawmills and auxiliary plants are constantly under inspection and most of those needing it have been overhauled so that they will be able to operate efficiently whenever called upon for rush orders or emergency service. Of course, there will be found some obsolescence in certain plants and machinery, but we feel confident this does not exist to such an extent as to impair the ability of the industry to supply all the lumber that may be required under even extraordinary demands.

Throughout the years the Southern lumber industry has maintained capable and resourceful traffic and transportation services, both by individual manufacturers and by the Association, and in the event of need the industry's transportation department can be counted upon to function satisfactorily to see that the industry is supplied with adequate transportation facilities to deliver the South's lumber to all markets or locations where it is needed.

In addition to the things previously mentioned, improvements have been ac-

(*Continued on page* 66)

South's Lumber Industry Prepared for War Developments

(*Continued from page* 64)

complished in the industry during recent years in manufacturing methods, in lumber treating and seasoning processes, refinements in grading rules, enlarged and improved inspection service, and other phases of lumber production and handling which place the Southern pine industry in a better position than formerly to render better service to Government as well as to private consumers.

The industry now has the benefit of experience gained in the prefabricating of CCC camps, and that experience will be most helpful to the Government in the erection of cantonments in the event of our becoming involved in war. This improvement in providing prefabricated panels, or units, which can be quickly assembled into houses, will eliminate most of the delay that was experienced during the last war in providing shelter for troops.

Also the Southern pine official grading rules now prescribe a definite moisture content limitation for all lumber used in house-building, and the comparatively recent invention of a moisture gauge, which accurately determines the moisture content of any piece of lumber, enables the manufacturers to provide material that is properly seasoned.

Great strides forward have been made recently in the demand for officially grade-marked lumber, which assures that the material is accurately manufactured, and of uniform size, correct width and thickness, and properly seasoned and graded. By using officially grade-marked lumber, consumers, including the Government construction agencies, can know at a glance the grade and quality of material delivered for their purposes without waste of time or unnecessary delay or expense for inspection which retarded Government construction during the last World war.

Considering the efficiently organized condition of the industry, its experience and success in cooperative activity, the improvements that have been achieved in manufacturing, treating, seasoning, handling and distribution of lumber, and the well-known and proven patriotism and loyal service to the country always manifested by members of the Southern lumber industry, there appears no reason for apprehension that this American industry will be found lacking when called upon, whether to meet unusual demands of prosperity in peace times, or to serve in crises and emergencies during the dangers and distress of war.

South's Oil in 1939 Worth $800,000,000 at the Well

(*Continued from page* 37)

waste resulting from production in excess of market demand.

Estimated Crude-Oil Production
(In barrels of 42 gallons)

State	1939	1938
Arkansas	20,540,000	18,180,000
Kentucky	5,510,000	5,821,000
Louisiana	93,000,000	95,208,000
Oklahoma	161,041,000	174,994,000
Texas	483,500,000	475,850,000
West Virginia	3,587,000	3,684,000
Total	767,178,000	773,737,000
Rest of U. S.	492,921,000	440,618,000
Total U. S.	1,260,099,000	1,214,355,000

Potential production is an important consideration now when so much thought is being given to the national defense. It assures the United States of adequate petroleum reserves which are immediately callable when needed. Authorities have estimated that, if the need arose, domestic production of crude oil could be increased by 50 per cent merely by opening up the wells choked-down by proration.

What effect the present European war is having, or will have, on the petroleum industry still is a guess. According to meager early reports, the first stages of the war have had little tendency to increase petroleum exports. Exports of motor fuel, in fact, actually declined in October, the month of latest available data.

Industrial economists point to the unusual nature of the war, the loss of the Central European countries as customers, the substantial Asian and South American sources of supply now open to England and France, and to the rationing of petroleum products throughout Europe, as evidence that the war may have little effect on the U. S. oil industry in 1940.

The South not only is the greatest oil-producing section of the country, but its 16 states contain nearly one-half of the petroleum industry's manufacturing activities. Capacity of southern petroleum refineries is almost 50 per cent of all refinery capacity in the country. In fact, petroleum refining is by far the largest single manufacturing industry in Louisiana, Oklahoma, and Texas. In Texas it accounts for 44 per cent, in Oklahoma 39 per cent, and in Louisiana 21 per cent, of the product value of all manufacturing industries. In the South as a whole, the petroleum industry's refineries add better than $1,000,000,000 annually to the value of manufacturing production. This is more than 10 per cent of the product value of all manufacturing in these 16 states.

From Texas, Louisiana, and Oklahoma stem many of the industry's greatest pipe-line systems, moving crude oil and refined products down to the Gulf up to the great Mid-Western markets. Out of a dozen Gulf ports, and along the Mississippi and most other southern waterways move many of the industry's 2,076 tank ships and tank barges, carrying petroleum and its products to market.

The South itself provides a huge market for its own petroleum products. About one-fourth of all motor fuel consumed in the country, for example, is used by southern motorists. The new industries that are growing so rapidly in the South are finding and using vast quantities of fuel oil, natural gas, and other petroleum fuels—all produced close at hand for their use.

Highly important to southern oil producers in 1939 was the start of Congressional hearings on the Cole Bill, which proposes to give the federal government control of oil production. Those opposing the bill believe that it not only is unnecessary, but is another manifestation of undemocratic bureaucracy leading to despotic assumption of power that inalienably should be the states'.

Outside control of oil production is held to be particularly dangerous by southern officials, not only because of the huge wealth that annually stems from the petroleum industry in employee-wages, farm royalties, and industry and employee purchases, but because the petroleum industry and its products now bear such a large part of the tax burden of the southern states.

Total U. S. 1939 petroleum tax bill is believed to have reached the all-time high record of $1,335,000,000. This is four times the industry's estimated net earnings and is equivalent to 10 per cent of all taxes levied in the entire country. In many southern states, particularly in the large oil-producing states, and in those states which have abnormally-high gasoline-tax rates (a phenomenon largely confined to the South), the petroleum industry and its products often pay more than one-half of all taxes collected in the state.

Looking ahead for the petroleum industry to 1940 is difficult, but it seems certain that in the consumption of petroleum products the industry will set new all-time records. Motor-fuel consumption is expected to increase substantially, in accordance with the trend of the past two years. Increases in consumption of the industry's most important product naturally will have a decided influence upon its operations.

WATER CONDITIONING, ETC.—
Office Publication—"Cochrane News," Volume 4, No. 7, for November-December, 1939, an attractive cover design showing the Cochrane Deaerator, 300,000 pounds per hour, at Virginia Public Service Corporation, Hampton, Va.; publication also presents other interesting news items and illustrations.
Cochrane Corporation, Philadelphia, Pa., manufacturing engineers, water conditioning, steam specialties, instruments, etc.

Shipbuilding at Highest Point Since World War

(*Continued from page* 33)

Reviewing the year from November 1, 1938, to November 1, 1939, it is seen that the Navy Department awarded contracts to private shipyards in the United States or placed orders with Government navy yards for thirty-two naval vessels, of which seventeen contracts totaling 169,095 displacement tons were placed with private shipyards and fifteen awards totaling 147,595 displacement tons with Government navy yards. The figures do not include numerous small craft of the navy program. No major awards have been made since November 1, 1939.

In the same period the Maritime Commission or private owners placed contracts with private shipbuilders for the construction of 118 seagoing commercial vessels of a total gross tonnage of 911,455. Of these vessels, 91 of the cargo or cargo and passenger type are building to the order of the Maritime Commission and 27 of the cargo, cargo and passenger and tanker types under private contracts —some with and some without Maritime Commission cooperation. Private contracts also were placed for more than 200 smaller craft.

Of the contracts for commercial seagoing vessels for the Maritime Commission and private owners under the Commission's program, 99 vessels are to be fitted with steam driven machinery and 42 with Diesel machinery, 28 of which are of the Diesel reduction gear type. While numerous oil tankers have been built with Diesel machinery in the last few years, the present contracts are the first extended applications of Diesel installations to new cargo and passenger vessels in the United States.

One of the important shipbuilding events of the past year was the launching at the works of the Newport News Shipbuilding and Dry Dock Company of the S. S. America, the largest commercial vessel ever built in the United States. It is contemplated that the America will be ready for service in the early summer of 1940.

A detailed distribution of commercial building contracts along the coastal waters is as follows:

Commercial Vessels of 100 Gross Tons and Over Under Construction in the Atlantic, Gulf and Pacific Coasts as of December 1, 1939.

Above Mason and Dixon Line

Yard	*Class of Vessel*	*Gross Tons*
Bethlehem Steel Co. (Quincy)	7 Cargo	59,500
Bethlehem Steel Co. (Staten Island)	5 Cargo	32,000
Federal Shipbuilding & D/D Co.	3 Tankers	26,900
	21 Cargo	159,400
Pusey & Jones Corp.	2 Cargo	11,800
Sun Shipbuilding & D/D Co.	7 Tankers	70,000
	14 Cargo	114,000
	4 Pass.-Cargo	36,800
		510,400

Below Mason and Dixon Line

Yard	*Class of Vessel*	*Gross Tons*
Bethlehem Steel Co. (Sparrows Pt.)	8 Tankers	77,800
	3 Pass.-Cargo	24,900
	11 Cargo	83,000
Charleston Shipbuilding & D/D Co.	1 Cargo	1,700
	2 Barges	350
Newport News Shipbuilding & D/D Co.	1 Pass.	24,800
	3 Tankers	34,500
	2 Cargo	14,800
	7 Pass.-Cargo	64,400
Welding Shipyard	1 Tanker	11,200
		337,450
Gulf Coast		
Ingalls	8 Cargo	71,200
	2 Barges	330
Pennsylvania Shipyard	2 Cargo	11,800
	1 Tug	165
Tampa Shipbuilding & D/D Co.	8 Cargo	59,200
Alabama Shipyard	1 Barge	350
Levingston Shipbuilding & D/D Co.	3 Ferryboats	2,590
	3 Tugs	330
	4 Barges	1,820
		147,785
West Coast		
Bethlehem Steel Co. (San Fran.)	5 Cargo	32,000
	1 Barge	650
Consolidated Steel	4 Cargo	25,600
Lake Wash. Shipyard	1 Survey Vessel	1,300
	1 Barge	275
Moore Shipbuilding & D/D Co.	4 Cargo	35,600
Seattle-Tacoma	5 Cargo	32,000
Western	5 Cargo	32,000
		159,425

Of the 38 Naval Vessels of 242,000 displacement tons under construction in the privately owned shipyards in the United States on December 1, 1939, no less than 55,000 displacement tons are under construction in yards south of the Mason Dixon Line.

Norton Machines

Among the exhibits which had been planned by the Norton Company of Worcester, Mass., for the National Machine Tool Show, scheduled to be held in Cleveland, Ohio, on October 2, and later cancelled, was the 6-inch Norton Grinding Machine, Type C Cylindrical, redesigned to give the utmost in rigidity, smooth appearance, operating convenience and accuracy. Norton Company also had planned to display the 10 by 36-inch Type CD Crankshaft Bearing Grinder; the No. 30 Semi-automatic Camp-O-Lap; the Norton No. 26 Hydrolap; the 5 by 30-inch Cam-O-Matic, and the Norton No. 2 Cutter and Tool Grinder. The Norton Company manufactures grinding wheels, grinding machines, pulpstones, abrasive grain, refractories, etc.

Unbreakable Mercury Switch

Durakool, Inc., of Elkhart, Ind., announces an improved Durakool Metal Mercury Switch and its new Double Reduction (two reducing agents) which, it is claimed, prevents deterioration of the mercury, eliminates the possibility of contact interruptions, and increases efficiency and reliability in operation. Durakools are said to be silent, unbreakable, noninflammable, and dependable for millions of contacts, allowing many applications, from wall switches to motor starters. They are in use on electrical devices requiring from a few operations a month to 2,400 a minute.

Tinnerman Forms New Corporation

After 70 years of continuous operation, the Tinnerman Stove and Range Company of Cleveland, Ohio, has discontinued the manufacturer of stoves and ranges, due to the rapid growth of its SPEED NUT Division, and will devote all its factory space, personnel and facilities to the manufacture of Speed Nuts and Speed Clips. To keep abreast of these new developments and to align its corporate structure with products now produced, it announces the formation of Tinnerman Products, Inc., of which Albert H. Tinnerman is president and treasurer, and George A. Tinnerman, vice president and general manager. Tinnerman engineering activities have led to the development of more than 500 different shapes and sizes of Speed Nuts, with production exceeding more than 1,000,000 pieces a day.

THE INHUMAN ELEMENT

BY

R. B. Williams

In just about every mill, factory and other industrial activity they have what is called the human element. It is a very convenient thing to have. When the whole operating system goes into a state of cramps, the "human element" is always trotted out to explain why it happened.

People just don't function perfectly on all occasions. A strange peculiarity of our nature—but actual, nevertheless. Machinery and equipment are made to operate properly—barring, of course, the "human element" that goes into the making of this machinery and equipment. Sometimes these machines and pieces of equipment just can't adapt themselves to the style of the men using them. It's the *in*human element against the human. Not hard, at all, to pick the winner.

This "human element" is a very contrary and unpredictable thing. It doesn't make sense. But I claim it is a greatly overworked quantity. The "*in*human element" should take its share of the load.

Recently a man in charge of important manufacturing operations showed me the record of his company's experience with wire rope. There just wasn't any consistency in it. Performance figures roamed all over the charts. One rope would last three or four times as long as another. The average, in the light of later experience, was low.

This man was inclined to lay the whole mess in the laps of the men using the ropes. I differed with him. It seemed to me that the trouble wasn't so much with the men who used the ropes as with the ropes the men used. I thought that the "*in*human element" was the thing that needed improving.

This man started using a different brand of rope—of the preformed type. The first few ropes that were put on the job showed up very well. He kept on using the preformed kind. The same results kept on coming. He finally got around to the opinion that this was all on account of the fact that preformed rope was able to discount the value of the "human element."

I've noticed a thing about preformed rope that I think is one of its best points. It is very consistent. Users who have had ropes that show performances all the way from good to very bad find that preformed ropes, one after another, give them consistently excellent returns.

If you want to be able to discount the "human element" correct the "*in*human element."

South's Construction Nears Record High

(Continued from page 45)

Republic Oil Refinery at Texas City, Texas; additional generating unit for the Savannah (Ga.) Electric & Power Co.; award of contract for a $500,000 office building at Sparrows Point, Md., for the Bethlehem Steel Co.; a $150,000 plant at Jackson, Miss., for the Great Southern Box Co., and a catalytic processing unit at Texas City, Texas, for Pan-American Refining Corp.

Clark Controller Birmingham Office

Effective early in 1940, The Clark Controller Company, Cleveland, Ohio, will establish a direct branch sales office in Birmingham, Alabama, with Harvey King in charge. Mr. King has had many years' experience in various phases of the electrical industry and for the past eleven years has specialized in control application. The Birmingham office will cover Alabama, Tennessee and the northern part of Mississippi.

CLASSIFIED OPPORTUNITIES

■ Machinery and Supplies

MOTOR BARGAINS
440 Volt, 60 Cycle, 3 Phase, 3450 Speed
2— 10 H.P. Lincoln Motors ....Each $45.00
2— 20 H.P. Continental Motors .. " 60.00
1— 30 H.P. Fairbanks-Morse Mot. " 72.50
1— 75 H.P. General Elec. Motor. " 100.00
1—100 H.P. Northwestern Motor . " 112.50
440 Volt, 60 Cycle, 3 Phase, 1750 Speed
1— 10 H.P. Lincoln Motors ....Each $50.00
1— 25 H.P. Fairbanks-Morse Mot. " 72.50
1— 50 H.P. Allis Chalmers Motor. " 95.00
1—100 H.P. Robbins & Myers Mot. " 148.50
1—200 H.P. General Elec. Motor . " 200.00
ABOVE MOTORS CAN BE RECONNECTED FOR 220 VOLT. PRICES COVER MOTORS ONLY AND ARE CASH F. O. B. CHICAGO, SUBJECT TO PRIOR SALE. MANY OTHER SIZES IN STOCK.
ELECTRICAL SURPLUS COMPANY
1885 MILWAUKEE AVE., CHICAGO

BIDS WANTED ON
NEW OR USED SHOP EQUIPMENT
1 8' Power Brake 12-Gauge Steel capacity
1 8' Power Squaring Shear 12-Gauge Steel capacity
1 Spot Welder with automatic control
1 1000—1500 amp. 12 volt Plating generator Sand Blast equipment
1 Buffing Spindle
1 20—30 H. P. Boiler
TERMS CASH
ANDREW LARSON
2227 Cedar Springs Dallas, Texas

■ Clocks

KLOCKS FOR ALL PURPOSES
Watchman's Clocks, Time Recorders and Supplies
L. E. Kaiser Klock Co.
321 N. Charles St., Baltimore, Md.
24 HOUR SERVICE ON ALL REPAIRS

■ Business Opportunities

For Sale—Townsite on prettiest lake in South Florida. Excellent rail and highway facilities, lights, soft water, hotel, stores, $50,000 worth of streets, good school, congenial people and no bonded debt. Unusual opportunity for developer of means. For details write "Florida", c/o Mfrs. Record, Balto., Md.

Would like to hear from communities in the South and Southwest that want new hotels, inns, etc.; also from owners of capital for erection and operation. I want to manage and direct such properties. Address No. 9449, Care Mfrs. Record.

Profitable office building in Southern city returning very attractive revenue offered cheap. Investment around $1,000,000.00; cash $650,000.00, balance self liquidating.
Address No. 400,
care of Manufacturers Record.

■ Positions Wanted

ACCOUNTANT wants position with a Southern Industry. Capable auditor, treasurer, secretary or Branch Manager. Address replies to No. 9450, care Manufacturers Record, Baltimore, Md.

SOUTH AMERICA
Former American Consul seeks connection with Southern industry, here or there. Interview arranged. McK., Box 401, Raleigh, N. C.

■ Factory Sites

SOUTH AMERICAN BUSINESS
If you are interested in a plant located on a Port dealing directly with Mexico, Central and South America; large markets in the United States; low price fuel and labor; all year working conditions; terminus of three airlines, railroads, and truck transportation, write W. E. Talbot, V. P. & G. M., Brownsville, Texas, Chamber of Commerce, for Industrial Survey.

INDUSTRIAL PLANT SITE—
CHARLESTON, S. C.
Fifty-eight acres in Industrial District north of the city limits. Served by three railroads. 1,800 foot water frontage on Cooper River estuary. Industrial water supply with tank and all mains installed. Also complete salt water fire protection system. 80,000 square feet of sprinklered wood warehouse, 31 employees houses and other structures. Best location on water front. Price less than present value of improvements. Industry seeking ideal site will be surprised at this bargain. Apply I. B., Box #368, Charleston, South Carolina.

NORFOLK WATERFRONT
40 acres, 1000 feet on deep water, with railroad trackage.
Percy S. Stephenson. Norfolk, Virginia

■ Agencies Wanted

Sales Engineer wants additional accounts to handle in Florida. Experienced in the engineering, sales and installation of Electrical Equipment, Air Conditioning and Refrigeration. Address P. O. Box 1221, Tampa, Fla.

Wanted manufacturer's agency proposition on commission basis for the State of Virginia and Eastern North Carolina for articles of merit to sell the wholesale distributor. Not interested in get-rich-quick cracked pot schemes. Reply No. 9454, care Manufacturers Record.

■ Men Wanted

SALARIED POSITIONS
$2,500 to $15,000
Our System of searching out salaried positions (hiding your identity) serves to increase your salary in line with ability. Each client must finance moderate cost of his campaign. If you are worth $2,500 to $15,000 yearly, can prove it, write for details.
EXECUTIVE PROMOTION SERVICE
300 B St., S. E. Washington, D. C.

■ Inventions for Sale

MANUFACTURERS—Write for our FREE Classification Sheet of Inventions for Sale, covering 135 main subjects, and in one or more of which you will doubtless be interested. ADAM FISHER CO., 578 Enright, St. Louis, Mo.

---

520 INVENTIONS FOR SALE
Send for free bulletin and sales plan.
PATENTEE SYSTEM
9441-V Pleasant Ave., Chicago, Ill.

■ Patent Attorneys

PAUL B. EATON, Patent Attorney, 1408-R Johnston Bldg., Charlotte, N. C., 514 Munsey Building, Washington, D. C., 417 Wachovia Bldg., Winston-Salem, N. C.

PATENTS SECURED. Low cost. Reasonable terms. 72-pg. book & advice free. Confidential, personal service. Reg. Pat. Atty., L. F. Randolph, Dept. 749, Washington, D. C.

"New Orleans States" 60th Anniversary

The NEW ORLEANS STATES, published daily by the Times-Picayune Publishing Company, New Orleans, Louisiana, celebrates its 60th anniversary on January 3. The STATES occupies an important position in the New Orleans newspaper field and numbers among its 60,000 subscribers many who have been readers for more than half a century. In celebration of the event, a special issue will be published comprising seven sections in which, in addition to the news of the day, the past sixty years is to be summarized in retrospect and augmented with panoramas of New Orleans and scenes of the past. The NEW ORLEANS STATES is to be congratulated upon its splendid record.

CONCRETE FLOOR FINISHES—
Bulletin—presenting suggested specifications for applying finishes and coverings on concrete residence floors.
Portland Cement Association, Chicago, Ill.

ELECTRIC HOISTS—
Bulletin No. 344-A—covering the Shaw-Box line of Portable Electric "Budgit" Hoists.
Shaw-Box Crane & Hoist Division of Manning, Maxwell & Moore, Inc., Muskegon, Mich,

BESSEMER FLAME CONTROL—
Bulletin—Covering the new J & L Bessemer Flame Control, embracing one of several methods on which patent applications have been filed by.
Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

WELDING ACCESSORIES AND ELECTRODES—
Booklet—20 pages, covering Hobart electrodes, electrode holders, hood and hand shields, protective clothing; welding, ground and power cables; lugs.
The Hobart Brothers Co., Troy, Ohio.

PORTABLE COMPRESSOR—
Bulletin ABY — "Gardner-Denver Utility Portables," illustrating and describing the Gardner-Denver ABY utility, streamlined portable compressor.
Gardner-Denver Company, Quincy, Ill.

PRESSURE VESSELS AND HEAT EXCHANGERS—
Buletin No. 1020—illustrating and briefly describing ALCO Pressure Vessels and Heat Exchangers.
Alco Products Division of American Locomotive Company, New York, N. Y.

WOOD PRESERVATION—
Booklet—illustrated, devoted to wood preservation and to Wolman Salts as an effective, clean preservative.
American Lumber & Treating Company, 37 West Van Buren Street, Chicago, Ill.

DIRECTORY OF MATERIALS—
Machine Design's Directory of Materials for 1939-40—complete revision of previous directories, the materials listed comprising practically all used by engineers and designers of machinery divided into eight sections, each a complete directory of materials of similar type; sections are: iron, steel and nonferrous alloys; plastics and other nonmetallics; iron, steel and nonferrous producers; plastics and nonmetallics producers; stampings producers; forgings producers; die castings producers; custom molders; price of directory 25 cents, published by—
Machine Design, Penton Building, 1213 West Third Street, Cleveland, Ohio.

■ Welders

Oxy-acetylene Welding Outfits, $27.73; Guaranteed for one year.
Superior Oxy-Acetylene Machine Co.
Hamilton, Ohio

■ Investment Engineer

Southern investments analyzed for returns. Agricultural properties developed. Economic surveys for industrial locations. Long experience. Write for outline of service.
C. D. Karnes, Tallulah, La.

Coal Situation and Outlook

(*Continued from page 36*)

mental machinations have swerved him from the opinion that coal must reach the ultimate consumer at a cost competitive with substitute fuels.

In a few weeks of increased demand during the autumn months the coal industry has made it evident that its survival is dependent on technological advances. By discarding primitive methods of production and turning to mechanization it has demonstrated its capacity to produce with fewer mines and fewer men.

Economists believe that 1940 will exceed 1937 in volume of business. If this prophecy is realized it will permit a fair test of the theory that coal will become a renascent industry with technological improvement to supplant primitive methods of extraction of this mineral resource.

There is another school of thought held by a group within the coal industry who believe governmental price-fixing will end ruthless competition within the ranks of producers and permit profits on the sale of the commodity they produce. It may be helpful during a depressed period, but no one has yet suggested how consumers can be required to buy coal at fixed prices if they can use competitive fuels at lower prices.

Protagonists of governmental price-fixing sincerely believe the establishment of minimum prices by law will stabilize the industry. They know that in certain areas coal is the only fuel available. Those who do not accept this view believe inflexible prices will result in turning many consumers to competitive fuels, when they are available. They believe it will reduce the annual production of coal and that high cost mines will suspend operations, unable to meet the competition from low cost mines.

At best there is little hope for the coal mines with high cost of production. Under established lawful prices they will suspend because of their inability to make profits. It may be an orderly but certain process of dissolution. Under a competitive system, without Guffey act prices, they will disappear more quickly, in obedience to the economic edict that permits only the survival of the fittest. The high cost mine is behind the eight ball, between Scylla and Charybdis. It will succumb to orderly processes fixed by government or to the law of the jungle.

Southern states are deeply interested in the revivification of the coal industry. The World War which was responsible for the expansion of the coal industry, also remade the coal map of America. The development of new coal fields south of the Mason and Dixon line, which had their genesis in the World War days, has resulted in the shift of production from northern to southern districts. Today the South leads in production.

Approximately 90% of the coal produced in America is mined in the Central and Appalachian areas. In 1913, the states of Illinois, Indiana, Ohio and Pennsylvania, produced 60.36% of the national output. The Southern states of Alabama, Kentucky, Maryland, Tennessee, Virginia and West Virginia, mined 26.9%. In 1938, the four Northern states produced 149,660,000 tons, or 43.42% of the national tonnage. The same six Southern states mined 160,239,000 tons, or 45.29% of the national output.

Supremacy of the South in coal production was not easily achieved. The larger consuming markets in the North, East and Middle West are closer geographically to Northern producers. To enter these markets Southern operators were required to overcome freight rate advantages favoring Northern districts. To retain these markets the South has been required to overcome freight rate advantages that have been frequently increased to aid the Northern operators. Before the advent of the NRA which forced unionization of all mining districts, recurrent strikes drove many consumers into the Southern districts for an adequate and uninterrupted supply of coal. Unconsciously, perhaps, John L. Lewis and his mine union, contributed to Southern dominance in production.

Since the advent of the NRA the problems of the coal industry have not been sectional. Together the operators have seen the encroachment of oil and natural gas on the markets. Together they have endured governmental interference and the erection of artificial governmental handicaps that have slowed the processes of production.

In a period of eight years operators protested in vain against the subsidization by the federal government of the TVA and kindred projects which promote the utilization of a laborless form of energy. In the same period they have been burdened with social-security taxes more onerous than similar burdens imposed on competitive forms of energy: have been required to submit to increased freight rates to increase the cost of coal to the consumer; have yielded control of wages, hours and operating conditions under the wage-hour law and Wagner act; have been forced through governmental intimidation to yield higher wages and the closed shop to the mine union; have endured regulatory control over their industry while competitive fuels have been permitted to enter the markets unrestrained and unshackled; have paid the arbitrary Guffey tax on production, requiring the industry to pay for its undesirable regulation and just recently has seen the Department of State make a trade pact with Venezuela, reducing the import tax on oil from ½c to ¼c per gallon to encourage the importation of foreign crude oil to displace American coal in the consuming markets along the Atlantic seaboard.

While agriculture has been wheedled with huge appropriations to increase purchasing power and water power given subsidies, coal, the greatest employing industry among the natural resources, has been made the target of governmental oppression while a victim of the prolonged depression among the consuming industries.

Coal has no quarrel with competitive fuels. It recognizes legitimate competition. It realizes it must meet oil and gas —substitute fuels—in consuming markets. It is not hesitant to accept the challenge for supremacy. It asks only for the removal of artificial handicaps that the government has imposed.

To meet this natural competition coal is making progress through mechanization and greater concentration in its efforts to regain lost markets. Mules and horses have been supplanted by electric motors. Pick mining has become obsolete. In 1918, cutting machines mined 60% of the coal while today more than 90% of the output is machine-mined. The number of new mechanical loading units installed was 520 in 1933; 725 in 1934; 846 in 1935; 1,379 in 1936; 1,448 in 1937, and 1,380 in 1938.

As a result of this installation of mechanical devices there has been a concentration of production in the fewer mines operated. In 1924 there were 129 mines, producing annually more than 500,000 tons each, which mined a total of 88,000,000 tons. In 1937, there were 212 mines in this same bracket which produced 167,000,000 tons. In 1924, 8.5% of all coal mines produced 49% of the national output. In 1937, 10% of the mines mined 68% of the national output.

In this acceptance of technologic advancement rests the future progress of coal as the primary source of the national energy demand. Only governmental intrusion can prevent the coal industry from solving its own problems. It has in recent days demonstrated its own capacity.

Patent Tactics and Law—A revised edition of "Patents"; by Roger Sherman Hoar, M.A., LL.B., Commercial Attorney of Bucyrus-Erie Company; Member of the Massachusetts, Wisconsin, Federal and Patent Office Bars; former Assistant Attorney General of Massachusetts; author of "Constitutional Conventions," "Conditional Sales," and "Wisconsin Unemployment Insurance."

Admitting the availability of good treatises on patent law, the author points out in his preface that the present volume is intended to be a treatise on patent tactics, plus a translation into "plain English of so much of the patent law as will enable an industrial executive or engineer when dealing with a patent problem, neer to understand the company's attorand to cooperate fully with him."

Ronald Press, New York, $4,50.